PSYCHE

JULY, 1924

EDITORIAL

Some questions that are not without interest to psychologists have been suggested by Dr. Crookshank, in his little illustrated book, *The Mongol in our Midst*, recently published by Messrs. Kegan Paul and Co. It is, of course, well known that a certain type of mental and physical backwardness has long been described, under the name of " Mongolism," by physicians specially interested in states of mental deficiency ; it is less well known, to physicians, that, in Western Europe, there are many people, in no sense imbecile, who are, physically and mentally, " Mongols," or Orientals rather than " Europeans " or Westerners. And this without any suggestion of racial admixture during historic times at least. With the medical and anthropological implications of these facts, discussed in some detail by Dr. Crookshank, we are not for the moment concerned, and his views are likely to be strongly opposed. But certain observations are important. Not only is there an extraordinary psychological similarity between individual " Mongolian imbeciles," but somewhat striking resemblances may be observed between these imbeciles and, not only the children of primitive Mongolian races, but young orang-utans. Now the orang-utan is the Mongol amongst apes, physically as well as psychologically. And again, those Western Europeans, who are of Mongoloid physique, though without any taint of mental deficiency, not only display a " Mongolian " psychical make-up, but manifest curious tastes and affinities. Thus, a statesman of European reputation whose Tartar physiognomy is well known to all caricaturists, spends his retirement in writing Buddhist plays: an English " Mongoloid " when a child, demanded Chinese *objets d'art* for a birthday present ; and the Chinese missions and public services attract Europeans whose physical tendencies towards " Mongolism " are obvious to the trained observer. It is quite certain that facts of this nature are very relevant to discussion of various social and political, as well as many psychological questions. It is increasingly clear that psychology, no less than anthropology, must be comparative. And, not merely comparative as between men and beasts, but as between races of mankind, as well as between individuals.

That Professor Vaihinger should have hesitated for over thirty years before publishing his now world-famous theory of Fictions is hardly more surprising than that thirteen further years should have elapsed before so important a book could see the light in England. But it is gratifying that a work which so greatly extends the scope of psychology as to include the whole of what has hitherto been regarded as metaphysics should at last be available. As the author, a consistent admirer of English thought throughout a long and active life (and he is happily still alive to realise our appreciation of his ***magnum opus*** in this country) points out, the importance of Fictions has long been recognised by English philosophers. Not only did English Nominalism of the Middle Ages (Occam) early realise the fictional nature of general ideas, but Hobbes, Locke, Hume, Berkeley, and many subsequent writers influenced by them and by Horne Tooke had encouraged a common-sense attitude to mental constructs, which, but for the religious revival of the latter years of the 19th century, and the ontological mirage due to the successes of certain mathematical logicians, would not have fallen into abeyance. The revival of this scientific attitude in psychology should enable *The Philosophy of As If* to make its full appeal during the next decade, and in the next issue of *Psyche* it will be shown that the theory of Fictions has had a formulation in the history of English thought very much more elaborate and explicit than even Professor Vaihinger imagines.

The revival of interest in Joan of Arc, for which Mr. Shaw and M. Anatole France are chiefly responsible, makes M. Denis' *The Mystery of Joan of Arc* (Murray 7/6) come opportunely. What were the Voices on which Joan relied, and what had she in common with the modern clairvoyant ? M. Denis has collected all the available evidence which would bear on the alleged psychic faculties of the Saint of Lorraine, and even the reader who cannot agree that she was " a messenger from the spirit world, one of God's mediums," may be grateful for the material thus rendered available from an unusual angle. Sir Arthur Conan Doyle has translated, introduced, and concluded the volume, which is therefore presented more in the manner of a spiritualist tract than a scientific study.

The ingenious educationist who has collected in the 383 pages entitled *Michael Neo-Paleologus, His Grammar* (Dent, 7/6) his whimsical reflections on the current methods of teaching grammar, has much to say which would be of value to students of language and of its relations to thought ; he seems, however, to be aware that he has chosen a method of exposition which may not please either the philosopher or the public. His main grievance, the neglect of context, is one which cannot be too often emphasised, and it is to be hoped that the wit and wisdom here expended (there are 100 illustrations and diagrams) will reach those on whom more orthodox methods of approach seem to have had but little effect.

BEHAVIORISM—THE MODERN NOTE IN PSYCHOLOGY[1]

BY DR. J. B. WATSON

Introduction. When, some time last summer, I innocently committed myself to meet Professor McDougall on the lecture platform in Washington, I understood that all that was required of me was to give a brief account of the new behavioristic movement in psychology now rapidly forging to the front. Had I known that my presentation was expected to take the form of a debate with Professor McDougall I fear timidity would have overcome me. Professor McDougall's forensic ability is too well known, and my own shortcomings in that direction are too well known, for me knowingly to offer him combat. So I think the only self-protective plan is to disregard all later instructions and attempt to give to-night a brief *resumé* of behaviorism—the modern note in psychology—and to tell why it will work and why the current introspective psychology of Professor McDougall will not work.

What is the behavioristic note in psychology? Psychology is as old as the human race. The tempting of Eve by the serpent is our first biblical record of the use of psychological methods. May I call attention to the fact, though, that the serpent when he tempted Eve did not ask her to introspect, to look into her mind to see what was going on. No, he handed her the apple and she bit into it. We have a similar example of behavioristic psychology in Grecian mythology, when the golden apple labelled " For the Fairest " was tossed into a crowd of society women, and again when Hippomenes, in order to win the race from Atalanta, threw golden apples in front of her, knowing full well that she would check her swift flight to pick them up.

One can go through history and show that early psychology was behavioristic—grew up around the notion that if you place a certain thing in front of an individual or a group of individuals, the individual or group will act, will do something. Behaviorism is a return to early common-sense. The keynote is: Given a certain object or situation, what will the individual do when confronted with it. Or the reverse of this formulation : Seeing an individual doing something, to be able to predict what object or situation is calling forth that act.

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[1] Professor McDougall's reply to Dr. Watson's latest exposition of Behaviorism is printed immediately after this article.—Ed. *Psyche.*

Behavioristic psychology, then, strives to learn something about the nature of human behavior. To get my individual to follow a certain line, to do certain things, what situation shall I set up ? Or, seeing the crowd in action, or the individual in action, to know enough about behavior to predict what the situation is that leads to that action.

This all sounds real ; one might say it seems to be just common-sense. How can anyone object to this formulation ? And yet, full of common-sense as it is, this behavioristic formulation of the problem of psychology has been a veritable battle-ground since 1912. To understand why this is so, let us examine the more conservative type of psychology which is represented by Professor McDougall. But to understand at all adequately the type of psychology which he represents we must take one little peep at the way superstitious responses have grown up and become a part of our very nature.

Religious Background of Introspective Psychology. No one knows just how the idea of a supernatural started. It probably had its origin in the general laziness of mankind. Certain individuals who in primitive society declined to work with their hands, to go out hunting, to make flints, to dig for roots, became behavioristic psychologists—observers of human nature.

They found that breaking boughs, thunder and other sound-producing phenomena, would throw the primitive individual from his very birth into a panicy state, meaning by that : stopping the chase, crying, hiding and the like—and that in this state it was easy to impose upon him. These lazy but good observers began to speculate on how wonderful it would be if they could get some device by which they could at will throw individuals into this fearsome attitude and in general control their behavior. The coloured nurses down south have gained control over the children by telling them that there is some one ready to grab them in the dark ; that when it is thundering there is a fearsome power which can be appeased by being good boys and girls. Medicine men flourished—a good medicine man had the best of everything and, best of all, he didn't have to work. These individuals were called medicine men soothsayers, dream interpreters, prophets—deities in modern times. Skill in bringing about these emotional conditionings of the people increased; organization among medicine men took place, and we began to have religions of one kind or another, and churches, temples, cathedrals and the like, each presided over by a medicine man.

I think an examination of the psychological history of people will show that their behavior is much more easily controlled by fear stimuli than by love. If the fear element were dropped out of any religion, that religion would not survive a year.

The chief medicine man in a family group is, of course, always the father. In the still larger group God or Jehovah takes the place of the family father. Thus even the modern child from the beginning is confronted by the dicta of the medicine man—be that his father, the soothsayer of the village, the God or Jehovah. Having been brought up in this attitude of authority, he never questions their written or spoken statements. He accepts them at their face value. He has never deviated from them, neither have his associates, and hence has never had an opportunity to prove or doubt their worth. This accounts for the hold religion and superstition have upon our life. It accounts for the psychology current to-day in practically every university. It partly accounts for the convincingness of Professor McDougall's argument for purpose.

An Example of Such Concepts. One example of such a concept is that every individual has a soul. This dogma has been present in human psychology from earliest antiquity. No one has ever touched the soul, or has seen one in a test tube, or has in any way come into a relationship with it as he has with the other objects of his daily experience. Nevertheless, to doubt it is to become a heretic and once might possibly even have led to the loss of one's head. Even to-day for a university man to question it in many institutions is to sign his own professional death warrant.

Medieval philosophy not only accepted the concept of the soul, but tried to define it, to deal with it as they dealt with objects of everyday experience. Consequently, in the philosophy of the Middle Ages we find such questions hotly debated as to the number of angels which can stand on the point of a needle.

With the development of the physical sciences which came with the renaissance, a certain release from this stifling soul cloud was obtained. A man could think of astronomy, the celestial bodies and their motions, of gravitation and the like, without involving soul, although the early scientists were as a rule devout Christians; nevertheless, they early began to leave soul out of their test tubes. Psychology and philosophy, however, in dealing as they thought with non-material objects, found it difficult to sidestep, and hence the concepts of mind and soul come down to the latter part of the nineteenth century. It was the boast of Wundt's students, in 1869, when the first psychological laboratory was established, that psychology had at last become a science without a soul. For fifty years we have kept this pseudo-science, exactly as Wundt laid it down. All that Wundt and his students really accomplished was to substitute for the word " soul " the word " consciousness."

An Examination of Consciousness. From the time of Wundt on, consciousness becomes the keynote of psychology. It is the keynote to-day. It has never been seen, touched, smelled, tasted, or moved. It is a plain assumption just as unprovable as the old concept of the soul. And to the behaviorist the two terms are essentially identical, so far as their metaphysical implications are concerned.

To show how unscientific is the concept, look for a moment at William James' definition of psychology. " Psychology is the description and explanation of states of consciousness as such." Starting with a definition which *assumes* what he starts out to prove, he escapes his difficulty by an *argumentum ad hominum.* " Consciousness—Oh, yes, everybody must know what this ' consciousness ' is." When we have a sensation of red, a perception, a thought, when we will to do something, or when we purpose to do something, or when we desire to do something, we are being conscious. In other words, they do not tell us what consciousness is, but merely begin to put things into it by assumption, and then when they come to analyse consciousness, naturally they find in it just what they put into it. Consequently, in the analysis of consciousness made by certain of the psychologists you find, as elements, sensations and their ghosts, the images. With others you find not only sensations, but so-called affective elements ; in still others you will find such elements as will—the so-called conative element in consciousness. With some psychologists you will find many hundreds of sensations of a certain type ; others will maintain that only a few of that type exist. And so it goes. Literally, millions of printed pages have been published on the minute analysis of this intangible something called ' consciousness.' And how do we begin work upon it ? Not by analysing it as we would a chemical compound, or the way a plant grows. No, those things are material things. This thing we call consciousness can be analysed only by self-introspection, turning around, and looking at what goes on inside.

In other words, instead of gazing at woods and trees and brooks and things, we must gaze at this undefined and undefinable something we call consciousness. As a result of this major assumption that there is such a thing as consciousness, and that we can analyse it by introspection, we find as many analyses as there are individual psychologists. There is no element of control. There is no way of experimentally attacking and solving psychological problems and standardising methods.

The Advent of the Behaviorists. In 1912 the behaviorists reached the conclusion that they could no longer be content to work with *intangibles*. They saw their brother scientists making progress in medicine, in chemistry, in physics. Every new discovery in those fields was of prime importance, every new element isolated in one laboratory could be isolated in some other laboratory ; each new element was immediately taken up in the warp and woof of science as a whole. May I call your attention to radium, to wireless, to insulin, to thyroxin, and hundreds of others ? Elements so isolated and methods so formulated immediately began to function in human achievement.

Not so with psychology, as we have pointed out. One has to agree with Professor Warner Fite that there has never been a discovery in subjective psychology ; there has been only medieval speculation. The behaviorist began his own formulation of the problem of psychology by sweeping aside all medieval conceptions. He dropped from his scientific vocabulary all subjective terms such as sensation, perception, image, desire, purpose, and even thinking and emotion as they were originally defined.

What has he set up in their place ? The behaviorist asks : Why don't we make what we can observe the real field of psychology ? Let us limit ourselves to things that can be observed, and formulate laws concerning only the observed things. Now what can we observe ? Well, we can observe *behavior—what the organism does or says*. And let me make this fundamental point at once : that *saying* is doing—that is, *behaving*. Speaking overtly or silently is just as objective a type of behavior as baseball.

The behaviorist puts the human organism in front of him and says : What can it do ? When does it start to do these things ? If it doesn't do these things by reason of its original nature, what can it be taught to do ? What methods shall society use in teaching it to do these things ? Again, having taught it to do these things, how long will that organism be able to do them without practice ? With this as subject matter, psychology connects up immediately with life.

We have known for a long time that we cannot get our animal to introspect and tell us about its consciousness, but we *can* keep it without food ; we can put it in a place where the temperature is low, or the temperature is high, where food is scarce, where sex stimulation is absent, and the like, and we *can* observe its behavior in those situations. We find that without asking it anything, we can, with this systematic, controlled observation, tell volumes about what each animal does, both by reason of its unlearned activities and through activities which it has to learn. We soon get to the point where we can say it is doing so and so because of so and so.

The rule, or measuring rod, which the behaviorist puts in front of him always is : Can I describe this bit of behavior I see in terms of " stimulus and response " ? By stimulus we mean any object in the general environment or any change in the physiological condition of the animal, such as the change we get when we keep an animal from sex activity, when we keep it from feeding, when we keep it from building a nest. By response we mean that system of organised activity that we see emphasised anywhere in any kind of an animal, as building a skyscraper, drawing plans, having babies, writing books, and the like.

At this point let me diverge to emphasise the fact that almost from infancy society begins to prescribe behavior. A Chinese baby must use chop sticks, eat rice, wear certain kinds of clothes, grow a pigtail, learn to speak Chinese, sit in a certain kind of way, worship his ancestors, and the like. The American baby must use a fork, learn quickly to form habits of personal cleanliness, wear certain kinds of clothes, learn reading, writing and arithmetic, become monogamous, worship the Christian God, go to church and, yes, even to speak upon a public platform. It is presumably not the function of the behaviorist to discuss whether these things which society prescribes serve as a help or a hindrance to the growth or adjustment of an individual. The behaviorist is working under the mandates of society, and consequently it does not come within his province to say to society : " If you decide that the human organism must behave in this way, you must arrange situations of such and such kinds." I would like to point out here that some time we will have a behavioristic ethics, experimental in type, which will tell us whether it is advisable from the standpoint of future adjustments of the individual to have one wife or many wives ; to have capital punishment or punishment of any kind ; whether prohibition or no prohibition ; easy divorces or no divorces ;

and whether many of our other prescribed courses of conduct make for adjustment of the individual or the contrary.

Some Specific Problems of the Behaviorists. You will find, then, the behaviorist touching humanity at every point. He brings the newborn individual into his experimental nursery and asks himself two questions: What is the baby doing now? What is the stimulus that makes him behave this way? The stimulus of tickling the cheek brings the response of turning the mouth to the side stimulated. The stimulus of the nipple brings out the sucking response. The stimulus of a rod placed on the palm of the hand brings closure of the hand and the suspension of the whole body by that hand and arm if the rod is raised. Stimulating the infant with a rapidly moving shadow across the eye will not produce blinking until the individual is sixty-five days of age. Stimulating the infant with an apple or stick of candy or any other object will not call out attempts at reaching until the baby is around 120 days of age. Stimulating a properly brought up infant at any age with snakes, fish, darkness, burning paper, birds, cats, dogs, monkeys, will not bring out that type of response which we call fear (which I would rather call " X ") which is a catching of the breath, a stiffening of the whole body, a turning away of the body from the source of stimulating, a running or crawling away.

On the other hand, there are just two things which will call out a fear response, namely, a loud sound, or loss of support.

Now the behaviorist finds from observing children brought up outside of his nursery that hundreds of these objects will call out fear responses. Consequently, the scientific question arises: If at birth only two stimuli will call out fear, how do all these other things ever finally come to call it out? Please notice that the question is not a speculative one. It can be answered by experiments, and the experiments can be reproduced and the same findings can be had in every laboratory in the land.

If you will take a snake, mouse or bug and show it to a baby, he begins to manipulate it, poking at this, that or the other part. Do this for ten days until you are logically certain that that animal is reacted to positively and does not call out fear response at any time. In contrast to this, pick up a steel bar and strike it behind the infant's head. Immediately the fear response is called forth. Now try this: At the instant you show him the animal, and just as he begins to reach for it, strike the steel bar behind his head. Do this three or four times. A new and important change is apparent. The animal now calls out the same response as the steel bar, namely, a fear response. We call this, in behavioristic psychology, the *conditioned emotional response.* I wish I had time to develop the idea of conditioned responses in general. We can set up conditioned responses in animals as low in the scale as the amoeba—not necessarily of the same kind as the above, but similar ones.

Thus it becomes easy to account for the child's fear of the dog. A dog comes towards it rapidly, jumps upon him, pushes him down, and at the same time barks excitedly. Oftentimes one such joint stimulation is all that is necessary to make the baby run away from the dog the moment it becomes within his range of vision.

If I had the time I should like to show you other conditioned emotional responses, such as those connected with love, where the mother by petting the child, rocking it, stimulating its sex organs in bathing, and the like, calls out the embrace, gurgling and crowing as an unlearned original response. Soon this response becomes conditioned. The mere sight of the mother calls out the same kind of response as actual bodily contacts. I should like to point out that in rage we get a similar set of facts. The stimulus of holding the infant's moving members brings out the original unlearned response we call rage. Soon the mere sight of a nurse that handles a child badly throws the child into a fit. Thus we see how relatively simple our emotional responses are in the beginning and how terribly complicated home life soon makes them.

One of the jobs in experimental work that we are doing in our infant laboratory in New York now is studying methods by means of which dangerous emotional responses can be removed and the individual retrained and reconditioned. The home breeds a multitude of frightful consequences. Constant attachment to the mother, or nurse, inability to play alone—and please note how quickly this situation thwarts and gets in the way of the other habits the infant should form. It soon has to be petted, rocked to sleep, fed certain types of food, fed by one individual. If anything interferes with this process of spoiling, excessive emotional behavior is at once exhibited. Many organic consequences result ; nutrition is interfered with, and glandular activity may be unduly accellerated or unduly depressed. The home, knowing nothing of these things, is breeding psychopathic individuals wholesale who, as soon as they are forced to put away nest habits, break down and become dependent upon society unless the psycho-analysts by a long, slow process, can recondition them. And may I say, without meaning to antagonise the psycho-analysts, that reconditioning the adult and forcing him to put on all the habits which he should have put on in his infancy, is a difficult if not all but impossiblet ask.

In the limited time at my disposal, I cannot take up other behavioristic methods. I do think these examples show that behavioristic psychology is alive; that it is something which society must reckon with, and ultimately lean upon.

Does Behavior Psychology Leave Out Anything? Professor McDougall will doubtless tell you that the behaviorist selects his problems. He will admit that the kind of work I have sketched is valuable to society, but he will tell you that there are many other phases in psychology which the behaviorist studiously and possibly ignorantly dismisses. One such problem is 'thinking.' How can you explain 'thought' in behavioristic terms? To do so requires considerable time.

May I just sketch how the behaviorist goes about this problem? He says: Go to the child; watch how the child laboriously begins to learn to talk. Every time a real dog goes by or the picture or a dog is shown, the nurse says: "dog." Soon the child becomes conditioned. He says "dog" when he sees a dog; he says "dog" when he sees the printed word "dog." At the end of three years some children can use as many as 2,000 words. Man is peculiarly an animal that reacts with words.

Now when we see the child reacting with his arms and legs, duplicating his father's morning exercises, we feel that there is no mystery about such actions. Again, when we hear him talking, the act seems simple and straightforward. But when we see the child sitting quietly for two minutes and then hear him suddenly exclaim: "Daddy, I just thought about the party I went to with you yesterday," we fall down in worship. "My child has begun to 'think'"! Thinking is a mysterious process which can never be studied—only *venerated*. To the behaviorist the process of thinking is not mysterious. May I say that it is as simple and straightforward as tennis playing? Let us go to the year-old child again. Please note well that it says all its words aloud. Listen to it as it wakens in the morning, stringing out its words, disturbing the sleep of the parents. Soon the mother or the nurse comes in and says: "You mustn't talk aloud," and if he persists you spank him a little. Soon mumbling the word takes the place of speaking it aloud. Again society comes along and says: "It isn't done—you must not mumble to yourself, keep your lips moving." And again, if he persists, you apply the electric shock of punishment, namely, spanking. Soon he mumbles his words behind his lips—society has nothing further to say. Saying words behind a gateway which society cannot enter is 'thought.' In other words, when we are thinking we are acting, but acting with muscles which are hidden from ordinary observation.

This is the end of my twenty-five minute story—I have had opportunity only to hurl a few behavioristic words at you ; it is beyond reason to expect you to react favourably to a scientific formulation which throws out of adjustment so much of your previous organisation. If it serves to make you only a little more critical of our present easy-going psychological formulations, I shall rest content. To accept behaviorism fully and freely requires a slow growth—the putting away of old habits and the formulation of new. Behaviorism is new wine that cannot be poured into old bottles.

FUNDAMENTALS OF PSYCHOLOGY[1]

By WILLIAM McDOUGALL

Professor of Psychology in Harvard University

Dr. Watson and I have been invited to debate upon the fundamentals of psychology, because we are regarded as holding extremely different views; yet there is much in common between us. I wish to emphasize this common ground no less than our differences.

I would begin by confessing that in this debate I have an initial advantage over Dr. Watson, an advantage which I feel to be so great as to be unfair; namely, all persons of common-sense will of necessity be on my side from the outset, or at least as soon as they understand the issue. On the other hand, Dr. Watson also can claim certain initial advantages; all these together constitute a considerable asset that partially redresses the balance. First, there is a considerable number of persons so constituted that they are attracted by whatever is bizarre, paradoxical, preposterous and outrageous, whatever is "agin the government," whatever is unorthodox and opposed to accepted principles. All these will inevitably be on Dr. Watson's side. Secondly, Dr. Watson's views are attractive to many persons, and especially to many young persons, by reason of the fact that these views simplify so greatly the problems that lie before the student of psychology: they abolish at one stroke very many tough problems with which the greatest intellects have struggled with only very partial success for more than two thousand years; and they do this by the bold and simple expedient of inviting the student to shut his eyes to them, to turn resolutely away from them and to forget that they exist. This naturally inspires in the breasts of many young people, especially perhaps those who still have examinations to pass, a feeling of profound gratitude to Dr. Watson. He appears to them as the great liberator, the man who sets free the slave of the lamp, who emancipates vast numbers of his unfortunate fellow creatures from the task of struggling with problems which they do not comprehend and which they cannot hope to solve. In short, Dr. Watson's views are attractive to those who are born tired, no less than to those who are born Bolshevists.[1]

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[1] The substance of remarks made in a debate before the Psychological Club of Washington D.C. on February 5th, 1924.

Thirdly, Dr. Watson's views not only have the air of attractive simplicity, but also they claim to bring, and they have the air of bringing, psychology into line with the other natural sciences and of rendering it strictly scientific.

Fourthly, Dr. Watson's cause on this occasion has the incalculable advantage of being presented by his attractive and forceful personality.

Fifthly, Watsonian behaviorism is a peculiarly American product. It may even be claimed that it bears very clearly the marks of the national genius for seeking short cuts to great results. And, if no European psychologist can be brought to regard it seriously, that may be regarded as merely another evidence of the effeteness of European civilisation and the obtuseness of the European intellect, beclouded by the mists of two thousand years of culture and tradition. Here, in this great and beautiful city, the capital of the proudest and most powerful nation in all the earth, this patriotic consideration can hardly fail to carry weight.

Lastly, Dr. Watson has the advantage of being in a position that must excite pity for him in the minds of those who understand the situation. And I will frankly confess that I share this feeling. I am sorry for Dr. Watson ; and I am sorry about him. For I regard Dr. Watson as a good man gone wrong. I regard him as a bold pioneer whose enthusiasm, in the cause of reform in psychology, has carried him too far in the path of reform, one whose impetus, increased by the plaudits of a throng of youthful admirers, has caused him to overshoot the mark and landed him in a ditch, a false position from which he has not yet summoned up the moral courage to retreat. And, so long as his followers continue to jump into the ditch after him, shouting loud songs of triumph as they go, he does need great moral courage in order to climb back and brush off the mud ; for such retreat might even seem to be a betrayal of his faithful followers.

Now, though I am sorry for Dr. Watson, I mean to be entirely frank about his position. If he were an ordinary human being, I should feel obliged to exercise a certain reserve, for fear of hurting his feelings. We all know that Dr. Watson has his feelings, like the rest of us. But I am at liberty to trample on his feelings in the most ruthless manner; for Dr. Watson has assured us (and it is the very essence of his peculiar doctrine) that he does not care a cent about feelings, whether his own or those of any other person.

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[1] In reviewing my *Outline of Psychology* in the pages of *The New Republic*, Dr. Watson has asserted that it represents a lazy arm-chair type of psychologizing. The ground of this charge seems to be that it requires of the student a certain amount of hard thinking in the intervals between his bustling activities in the laboratory. Since such thinking may best be carried on in an arm-chair, I submit without reserve that more arm-chair work is the greatest need of American students of psychology at the present time.

After these preliminary observations, I will point out that Dr. Watson has shown serious misunderstanding of my position, and does me grave injustice in certain respects. Namely, he suspects me of being a sort of priest in disguise, a wolf in sheep's clothing, a believer in conventional morality, an upholder of exploded dogmas. He has announced in large head-lines that "McDougall returns to religion."[1] I cannot stop to refute these dreadful charges. I must be content to assert flatly that I am a hard-boiled scientist, as hard boiled as Dr. Watson himself and perhaps more so.[2]

In all this psychology business, my aim is purely and solely to approximate towards the truth, that is to say, to achieve such understanding of human nature as will promote for each of us our power of controlling it, both in ourselves and in others.

In spite of the clarity of Dr. Watson's exposition this evening, I do not believe that he has made quite clear to you the nature of the issues between us. There are really two main questions in dispute, two fundamentals on which we disagree. These may be shortly defined as, first, Dr. Watson's behaviorism, secondly, his acceptance of the mechanistic dogma. The second is the more important. I will say a few words about each of these topics in the order named.

There are, as I understand it, three chief forms of 'behaviorism,' as the word is commonly used. First, there is 'metaphysical behaviorism,' which also goes by the name of Neo-Realism. This is an inversion of subjective idealism. While the idealist says—"What you call the things or objects of the physical world are really your thoughts or phases of your thinking," the neo-realist says—" What you call your thoughts or phases of your thinking and feeling are really things or processes of the physical world." I need not trouble you by dwelling further upon this strange doctrine: for it is not the form of behaviorism expounded by Dr. Watson.[1] I will only say of it that it is the latest and presumably the last (because the only remaining) possible formulation of that most elusive of all relations, the relation of the mental to the physical. As a novelty (which we owe to a suggestion from the extraordinarily fertile mind of William James) it deserves and is enjoying a certain vogue.

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[1] In making this charge in the pages of *The New Republic*, Dr. Watson seems to ignore the fact that I argued (in the pages of *Mind*) for the dualistic view of human nature, as long ago as 1898 and again in my first book (1905) as well as in my *Body and Mind* (1911). I may add that for nearly twenty years I have been a member of the Council of the Society for Psychical Research, and have thus publicly and shamelessly avowed my leanings towards "superstition."

[2] One of Watson's most vigorous disciples, Dr. K. S. Lashley, taking his cue from his leader, has recently described me as "bouncing back and forth between accurate description and the exhortations of a soap-box evangelist."

Secondly, there is the true or original Watsonian behaviorism. There is no "metaphysical nonsense" about this. In fact, it is its principal distinction, the principal virtue claimed for it, that it extradites from the province of psychology every question that may be suspected of being metaphysical, and so purges the fold of the true believers, leaving them in intellectual peace for evermore. The essence of this form of behaviorism is that it refuses to have any dealings with introspectively observable facts, resolutely refuses to attempt to state them, describe them, account for them, make use of them, or take account of them in any way. All such facts as feelings, feelings of pleasure and pain or distress; emotional experiences, those we denote by such terms as anger, fear, disgust, pity, disappointment, sorrow, and so forth; all experiences of desiring, longing, striving, making an effort, choosing; all experiences of recollecting, imagining, dreaming, of phantasy, of anticipation, of planning or foreseeing; all these and all other experiences are to be resolutely ignored by this weird new psychology. The psychologist is to rely upon data of one kind only, the data or facts of observation obtainable by observing the movements and other bodily changes exhibited by human and other organisms.

Thirdly, there is sane behaviorism, or that kind of psychology which, while making use of all introspectively observable facts or data, does not neglect the observation of behavior, does not fail to make full use of all the facts which are the exclusive data of Watsonian behaviorism. This sane behaviorism is the kind of psychology that is referred to approvingly, by many contemporary writers in other fields, as "behavioristic psychology." And now, trampling ruthlessly on Dr. Watson's feelings, I make the impudent claim to be the chief begetter and exponent of this sane behaviorism or behavioristic psychology, as distinct from the other two forms of behaviorism. I claim in fact that, as regards the behaviorism which is approvingly referred to by many contemporary writers other than technical psychologists, I, rather than Dr. Watson, am the arch-behaviorist. Up to the end of the last century and beyond it, psychologists did in the main concentrate their attention upon the introspectively observable facts, unduly neglecting the facts of human action or behavior and the need for some adequate theory of behavior and of character, of which behavior or conduct is the expression. This neglect is implied in the definition of psychology commonly accepted at that time, namely, the "science of consciousness," and it may be well illustrated by reference to two leading psychologists, one of the middle, the other of the end, of the nineteenth century. John Stuart Mill, after expending much labour in the endeavour to patch up the hopelessly inadequate psychology of his father, James Mill, and of the other British Associationists, seems to have realised that the psychology he had achieved by this patching process had little or no bearing upon the facts of conduct and of character : for he set to work to construct a completely new science, a science different from and independent of psychology, a science of behavior, of conduct and of character, for which he proposed the name "Ethology."

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[1] Watson's followers do not seem to be quite sure whether he more recently has meant to accept this metaphysical behaviorism. Dr. Lashley, for example, suspects him of having abandoned his original position in favour of this view (" Behavioristic Interpretation of Consciousness," Psychol. Rev., 1923). In using the unqualified word " behaviorism " I shall hereafter mean to denote the original Watsonian variety, the second of the three forms distinguished in the text.

At the end of the century, or a little later, my lamented friend, Dr. Charles Mercier, repeated this significant attempt. He was an ardent disciple of Herbert Spencer, and had written several well-known and forcible expositions of Spencerian psychology. Then, seemingly in blissful ignorance of J. S. Mill's proposal, he also, realising that his psychology threw little or no light upon human action, conduct, or behavior, proposed to construct a new science of behavior. This time the name given to this new science was "Praxiology."

It was at this time that I was beginning to struggle with the fundamentals of psychology. And it seemed to me that both Mill and Mercier were in error ; that what was needed was not a new science of behavior under a new Greek name, but rather a reform of psychology, consisting in a greater attention to the facts of behavior or conduct, and some theory of human action less inadequate than the hedonism of Mill and Bain, or the ideo-motor theory of the intellectualists, or the mechanical reflex-theory of the Spencerian psychologists. I gave expression to this view in my first book,[1] by proposing to define psychology as the positive science of conduct. I further defended this definition and expounded the need of this reform in my *Introduction to Social Psychology* (1908). And in 1912 I published my little book entitled *Psychology, the Study of Behavior.* I also proposed that distinction between psychology and physiology which Dr. Watson accepts, namely, that physiology studies the processes of organs and tissues, while psychology studies the total activities of the organism. Further, in the year 1901, I had begun to practice strictly behavioristic experiment upon infants, making a strictly objective or behavioristic study of the development of colour-discrimination in my children ; by this means I was able to demonstrate for the first time the capacity for colour-discrimination as early as the second half-year after birth.[2] That is to say, I practiced with good result, as early as the year 1901, the principles which Dr. Watson began to expound and apply some ten years later.

Dr. Watson and I are, then, engaged in the same enterprise, the endeavour to reform psychology by correcting the traditional tendency to concentrate upon the facts of consciousness to the neglect of the facts of behavior. The difference between us in this respect is that I, unlike Dr. Watson, have not made myself at the same time famous and ridiculous by allowing the impetus of my reforming zeal to carry me over from one lopsided extreme position to its opposite, from exclusive concern with the facts of consciousness to exclusive concern with the facts of behavior. Dr. Watson has been content, like J. S. Mill and Charles Mercier before him, to regard psychology as the science of consciousness and to set to work like them to construct a new and independent science of behaviour. He differs from them only in denying that the older study (that of consciousness) has any scientific value or interest. I, on the other hand, maintain that the two sets of data, the facts ascertainable by introspective observation and the objectively observable facts of behavior, are not data for two distinct sciences, but rather are two classes of data both useful, both indispensable, for the one science of human nature properly called "psychology." Dr. Watson refuses to attempt to make use of the data of the former class, because from them alone, as he rightly insists, a science of human nature can never be constructed, and because the efforts of two thousand years along this line have proved relatively sterile ; I, on the other hand, insist that the problems of human nature are so obscure and difficult that we cannot afford to neglect, or to throw deliberately aside, any available data, and certainly not the data afforded by one's own introspection and by the reports of similar introspective observations made by our fellow men ; but that rather we need to make use of every available source of information and mode of observation. And here I would point out that there is a third great class of data which Dr. Watson's principles compel him to neglect, to repudiate ; namely, the facts which we may observe as to the various conditions (external, bodily, and mental or subjective) under which the various modes and phases of our conscious experience arise. Dr. Watson, then, deliberately restricts himself to the use of one of three great classes of data, refusing to attempt to make use of the other two great classes ; while I claim that all three are useful and valid, and that to debar oneself from the use of two of these classes is to pass a self-denying ordinance of a peculiarly gratuitous foolishness.

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[1] *Primer of Physiological Psychology*, 1905.

[2] "An Investigation of the Colour Sense of two Infants." *Brit. Journ. of Psychology.*

Let me briefly illustrate this difference between us by a few samples of concrete psychological problems, problems of human nature. I place my hand upon the table, and Dr. Watson sticks a pin into the tip of one finger. My hand is promptly withdrawn ; that is the behavioristic fact. I say that I felt a sharp pain when the pin was stuck in. Dr. Watson is not interested in my report of that fact. His principles will not allow him to take account of the fact, nor to enquire whether my statement is true or false. He repeats his experiment on a thousand hands, hands of babies, men, and monkeys ; and, finding that in every case the hand is promptly withdrawn, he makes the empirical generalisation that sticking a pin into an extended hand causes it to be promptly withdrawn ; and that is as far as his methods and principles will allow him to go in the study of this interesting phenomenon. He maintains with some plausibility that my introspectively observed fact of painful feeling is quite irrelevant and useless to him as a student of the human organism. But now I ask Dr. Watson to repeat the experiment on myself. He sticks in the pin once more ; and this time the hand is not withdrawn, but remains at rest, and I continue to smile calmly upon him. What will Dr. Watson do with this new fact, a fact so upsetting to his empirical generalisation which appeared to be on the point of becoming a " law of nature " ? He can do nothing with it. But, if for a moment he will consent to use ordinary good sense and will listen to my " introspective " report, and if I report truly, he may be much enlightened ; though, if I wish to mislead him and report falsely he may be deceived. There in a nutshell you have the difference between sane behaviorism and Watsonian behaviorism.[1]

It is true that Dr. Watson declares his willingness to make use of the "verbal reports" of the subjects of his experiments; but, when such a report consists of statements of introspectively observed facts, Dr. Watson is not entitled (consistently with his principles) to take account of the meaning of the words his subject utters; his principles permit him only to observe and record the movements of his subject's speech-organs and the physical vibrations of the air set up by them. He cannot, consistently with his principles, raise the question whether his subject is reporting accurately or truthfully.

Let me enforce this last important point with another instance. You call on a friend and ask her to accompany you to the theatre. She refuses, alleging a headache; and you go away crestfallen in an agony of doubt, asking yourself: Was she telling the truth about that headache, or was it merely an excuse for getting rid of me? Would the most scientific behaviorist be proof against the weakness of raising in his own mind this baffling question? Be it further noted that the behaviorist, even if he (being so inconsistent as to wish to enquire into the truth or falsehood of the statement) were given the fullest opportunity to apply a battery of his most delicate instruments to the person claiming the headache, would obtain no satisfying answer; his instruments could wring no answer from the Sphinx, and he would continue to be tortured by that baffling question. In passing I will point out that here we are close to the problems of malingering; and that, among the symptoms claimed by malingerers, the commonest are subjective symptoms, accessible only to introspective observation, headaches, pains, feelings of fear, of fatigue, of dizziness, of unreality, of moral unworthiness, hallucinatory voices and images, delusions and amnesias. Assertions of such subjective symptoms constitute very real and practically important problems for medical men, and especially for medical officers in the Army. During the late war I had to face such problems in thousands of instances. And sometimes on the question of truth or falsehood of the introspective report there hangs the possibility of the severest penalty, even the death penalty. Yet by the Watsonian behaviorist such questions of truth and falsehood must be sternly put aside as of no interest to him.

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[1] Although I here use the expression "sane behaviorism" to denote the type of psychology for which I stand, I urge that the word "behaviorism" should be used henceforth only to denote Watsonian behaviorism. Any other use of the word leads to confusion and misunderstanding.

Again, there is a large class of problems of great interest, problem-of the borderland between physiology and psychology which the consistent behaviorist must for ever pass by as a *terra incognita*: a very large proportion of the fascinating problems of senses physiology belong here, such problems as the issue between the colour-theories of Hering and of Helmholtz, and the thousands of facts, such as after-images, colour-contrast, colour and tone-harmony, the effects of brain-lessions on sensory experiences, and so forth. I will mention specifically only one very simple example of such problems. If you give me a dose of a certain drug (santonin) I soon afterwards begin to observe that all the white and gray surfaces of this hall appear to be no longer white or grey, but tinged with violet colour. The drug has produced a chemical change in the substance of my cerebro-retinal tracts which in turn produces this curious subjective effect. Now the man who shall explain this effect will have added importantly to our knowledge of the human organism. Yet, if we all were consistent behaviorists, we should never come within sight of this problem, much less solve it; or at least, though purely objective observation might discover that santonim has some peculiar effect upon the retino-cerebral tract, it is highly improbable that the fact would be discovered until after some further centuries of progress in the science of physiology.

Another type of problem insoluble for the behaviorist. I meet a stranger and feel a strange aversion from him, for which feeling I cannot account. The behaviorist may notice my cold aversive behavior; and he will say that my report of my feeling does not interest him. Well and good so far. But later in the day I remember a horrible dream of the foregoing night in which has appeared a sinister figure; and now I recognise a subtle likeness between the stranger and this figure; and recognise also the similarity between my emotional experiences before this figure and before the stranger respectively. Do not the introspectively reported facts throw some light on my reaction to the stranger? Do they not in a sense explain it? Are they of no interest to the student of human nature? Yet Dr. Watson's principles forbid him to take account of the meaning of the words in which I report the dream.

In this connection I would point out that some bold physicians, caring nothing for logical consistency and everything for the appearance of being up-to-date and "in the swim," proclaim allegiance both to Dr. Watson and to the principles of psycho-analysis. But psycho-analysis relies very largely upon the analysis of dreams reported by the patient : and dreams are for ever a closed book to the true behaviorist. He may listen to your long-winded descriptions of your amusing or terrifying or absurd dream-experiences ; but for him your words are merely so many physical vibrations : the meanings of your words reporting these experiences he cannot consistently take into account. It is all one to him whether your description is approximately truthful, or a mere fable concocted on the spur of the moment for his edification [1]

Day-dreams also are forbidden ground to the behaviorist ; yet we have recently begun to realise that the sympathetic uncovering of the phantasies and day-dreams of children may be in many cases of the utmost importance to the educator or parent who would wisely guide the development of the child.

One more instance. I come into this hall and see a man on this platform scraping the guts of a cat with hairs from the tail of a horse and a thousand persons sitting silently in attitudes of wrapt attention ; and presently they break out into wild applause. How will the behaviorist explain these strange incidents ? How explain the fact that the vibrations emitted by the cat-gut stimulate all the thousand into absolute silence and quiescence, and the further fact that the cessation of the stimulus seems to be a stimulus to the most frantic activity ? Common-sense and psychology agree in accepting the explanation that the audience heard the music with keen pleasure and vented their gratitude and admiration for the artist in shouts and hand-clappings. But the behaviorist knows nothing of pleasure and pain, of admiration and gratitude. He has relegated all such "metaphysical entities" to the dust heap, and must seek some other explanation. Let us leave him seeking it. The search will keep him harmlessly occupied for some centuries to come.[2] Some of you may suspect that I am seeking to discredit Dr. Watson by exaggerating grossly the preposterousness of his doctrine. I will therefore conclude this section of my remarks by referring to the most famous and most explicitly formulated article of his creed, one which puts all the others into the shade. It runs : All that is called thinking is merely the mechanical play of the speech organs. In his excess of zeal Dr. Watson (in a manner strongly reminiscent of the late lamented Dr. Jacques Loeb) overshoots his own mark and tries to show that this view is plausible, even if by " speech organs " we denote only the peripheral organs, the muscles, etc., of lips, tongue and larynx. But I do not wish to take advantage of this incautious slip on his part ; and I will give Dr. Watson's view the benefit of the assumption that the internal or cerebral organs of speech may operate without innervating the peripheral organs. Even under this less extravagant form, this view of the thinking-process is rendered untenable by a multitude, of familiar facts ; for example if I keep my speech-organs cleared for action, I can think no better than if I am sucking a pipe (some of us even find that sucking a pipe is an aid to thinking), chewing a mouthful of food, or whistling or humming a familiar tune. I ask you to examine the question in the light of your own experience. Do such activities of the organs of speech interfere appreciably with such thinking as planning a move on the chess-board ? Again, there are many cases on record of patients rendered aphasic, that is speechless, by injury, not of the peripheral speech-organs, but of the cerebral speech-organs ; yet many such patients think very well ; they know very well what they want to say, but cannot say it ; and some such patients can play such a game as chess, even though their cerebral speech-organs are so far destroyed that, as well as finding it impossible to utter coherent speech, they cannot understand written or spoken language.

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[1] This very natural inclination to run with the hare and hunt with the hounds, to do lip-service to the two most fashionable fads of the moment, is not confined to physicians. I find it, for example, expressed in a recent work by an economist, Prof. A. B. Wolfe, *Conservatism, Radicalism, and Scientific Method.*

[2] I note in passing that Dr. Watson's principal book contains no mention of pleasure or of pain, or at least I fail to find any. This is evidence of praiseworthy effort after consistency on his part. It should be noted that even the search for the neural correlates of pleasure and pain is a closed *route* for the behaviorist, just as much as the search for neural correlates of the sensory qualities.

Again, some musicians of very limited powers of vocalisation can read the score of a complex orchestral composition. And some of them tell us that they prefer to sit at home and read the score of a great symphony rather than go to the concert-hall to hear it performed ; because, when they read it in silence, they can appreciate and enjoy it to the full, whereas, when they listen to the orchestra, they are annoyed by the errors and shortcomings of the performers. The only answer Dr. Watson can make to these facts (his only response to these " stimuli ") is to ignore them entirely, or to assert that, when he says " thinking," he means verbal thinking. If he takes the second line, I reply that of course verbal thinking is by definition thinking by the aid of words, and of course cerebral speech-organs are involved in it. No one doubts that. My point is that much thinking, *e.g.*, chess-playing, planning a house or garden, inventing a machine, reading or composing music, dreaming, building castles in the air, all these and many other important kinds of thinking do not necessarily involve any play of the speech-organs, whether peripheral or cerebral, and often go on without such accompaniment.

I turn to consider very briefly the more important question at issue between us, namely, the truth or plausibility of the mechanistic dogma. This I say is more important because, unlike Watsonian behaviorism, it is not merely a passing fashion of a group of pundits, cloistered in psychological laboratories. It is a metaphysical assumption which has been of great influence ever since the day when Democritus first clearly formulated it. It has reappeared as the determining factor in such different philosophies as the materialism of Hobbes and Lamettrie, the pantheism of Spinoza, and the idealism of Bernard Bosanquet. And it is accepted to-day by a large number of biologists as an unquestionable first principle and a necessary foundation of all science. As applied to human nature, to human conduct, it may be and is commonly stated in two ways, a narrower and a wider. The narrower formulation runs: Man is a machine and his every action is the outcome of mechanical processes that in theory can be exactly calculated and foretold according to strictly mechanical principles. The wider formulation runs: Every human activity and process, like every other process in the world, is strictly determined by antecedent processes and therefore, in principle, can be predicted with complete accuracy.

The only test which we can usefully apply to this mechanistic assumption is the pragmatic test. Does it work? Is it a good working hypothesis, that is, one which fruitfully guides our observation and our thinking? Well, in the sphere of the inorganic sciences, it has worked very well until recently: it has proved itself a good working hypothesis. But recently some physicists (I have in mind especially Prof. Bohr and his theory of the structure of the atom) have found that they can make better progress, if they reject this mechanical hypothesis and make non-mechanical assumptions: and I understand that this new fashion is rapidly gaining ground among the physicists.

But, in the sphere of human nature and conduct, this mechanistic assumption has never shown itself to have any value or usefulness as a working hypothesis. Rather, it has in very many cases blinded those who have held it dogmatically to a multitude of facts and has led to various extravagant and absurd views of human nature, of which views Watsonian behaviorism is one.

I submit to you the proposition that any psychology which accepts this mechanistic dogma and shapes itself accordingly is useless, save for certain very limited purposes; because it is incapable of recognising and of taking account of the most fundamental facts of human behavior. I may best illustrate this fact very briefly by pointing out that, for any such psychology, certain words that are indispensable for the normal conduct of life lose their meaning entirely and have to be dropped, for example, all such words as "incentive," "motive," "purpose," "intention," "goal," 'desire," "valuing," "striving," "willing," "hoping," "responsibility."[1] Now, I put it to the practical men among you, to the educators, the business men, the personnel-managers, and especially to the men of law, the eminent jurists here present: Have you any use for a psychology from which these words and all words of similar meaning are extruded, because deprived of all meaning? Of course you have no use for it. To adopt such a psychology is to paralyse yourself in all practical affairs, if you consistently apply it. Consider the case of a judge or juryman set to try a case of murder and prohibited by his principles from enquiring into the intentions, the motives, and the responsibility of the accused. It cannot be done: such a judge would be useless: such psychology will not work in practical affairs.[2] Putting the case more broadly, I say we are all bound to believe, and (so long as we are efficient members of society) we show by our acts that we do believe, that human efforts, human desires, human ideals, human strivings do make a difference to the course of events. If we do not believe this, it is futile and inconsistent to talk of, and to strive after, self-discipline, or the moral-training of our children, or social betterment, or the realisation by our efforts of any ideal whatsoever.

At the present time in all parts of the world all men and women of goodwill and public spirit are seeking and striving to find some way to prevent the outbreak of a new world war. But, if the mechanical psychology is true, if all human action as well as all other events are strictly predetermined, it is perfectly futile for us to think, to plan, to strive to prevent war; for the war is either coming or not coming, regardless of what men may do to prevent it or to incite it. All of us may just as well relax our efforts, eat, drink and be merry; for our thinking out of plans, our Leagues of Nations, our World Courts, our disarmament treaties, our most strenuous efforts to realise the ideal of peace by aid of such plans, all alike are perfectly futile. If all men believed the teachings of the mechanical psychology (and only beliefs that govern action are real beliefs) no man would raise a finger in the effort to prevent war, to achieve peace, or to realise any other ideal. So I say that the mechanical psychology is useless and far worse than useless: it is paralysing to human effort. And it flies in the face of fundamental and obvious facts. The most fundamental fact about human life is that from moment to moment each one of us is constantly engaged in striving to bring about, to realise, to make actual, that which he conceives as possible and desires to achieve, whether it is only the securing of his next meal, the control of his temper, or the realisation of a great ideal. Man is fundamentally a purposive striving creature. He looks before and after and longs for what is not. And he does not merely long ; he strives to achieve that which he longs for, to bring about what is not yet, what he judges and desires should be ; sometimes he succeeds, sometimes he fails, and sometimes he makes some progress towards his ideal goal. Any psychology which refuses to recognise the reality of this longing and striving and which denies all efficiency to such striving is useless and worse. Like behaviorism it is a mere fad of the academic mind that bars the progress of our knowledge of human nature. As the late Professo Münsterberg so strongly and repeatedly insisted, this elaborate academic fiction which is the mechanical psychology has no bearing on the practical problems of human life. As this is a personal debate, I will illustrate the fact in this way. Since the publication of my *Introduction to Social Psychology* in the year 1908, some scores of books, I think I might safely say some hundreds, have been published, dealing with problems of applied psychology and founded avowedly or actually on the teachings of that book of mine. On the other hand, I ask, what social application in education, in medicine, in industry, in politics, can the mechanical psychology claim ? The answer is—none. And one of the surest predictions we can make about human affairs is that it never will. To which prediction I add another, namely, hat in proportion as psychology resigns its pretensions to be an exact science based on mechanical principles and frankly accepts purposive strivings as a fundamental category, as fundamental as the law of conservation of momentum in mechanics, in just such proportion will it gain recognition as the indispensable basis of all the social sciences. This prediction is not without foundation in past experience. We have had already an impressive demonstration of the truth I am insisting on in the field of mental medicine. The mechanical psychology, the intellectualistic psychology, and the hedonistic psychology, these three psychologies, which were the prevailing fashions of the Nineteenth

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[1] I notice that Dr. Watson in his later book consistently avoids using these words, with the exception of "incentive." In using this word "incentive," he is guilty of a logical lapse; for in any mechanical psychology there is no meaning to the word "incentive," there are only stimuli and mechanical reactions.

[2] I refer the reader interested in this aspect of the question to an excellent article by Mr. S. S. Glueck, *Journal of Criminal Law*, 1923.

Century, were of little or no use to the students of mental disease. In consequence mental medicine, or psychiatry, was at a standstill. The genius of Freud, disregarding all these traditional psychologies, introduced a psychology of which the keynote is purposive striving, a hormic psychology which operates not with mechanical reflexes, and not with such vague inert abstractions as sensations and ideas, but with active purposive tendencies, impulses, desires, longings and strivings ; and psychiatry at once began to make, and continue to make, great strides.[1]

Descending from the most complex to the simplest forms of behavior, I may point out that the mechanical hypothesis fails to explain the very simplest instances of animal learning or adaptive behavior. I have shown[2] that Dr. Watson's pretended explanation of such instances is entirely fallacious, and I have asked in vain for an answer. In the same book I have shown that the homing of animals cannot be explained by either one of the only available mechanical hypotheses (that of reflexes and that of tropism), but only in terms of intelligent learning similar in nature to our own acquirement of knowledge ; and I have in vain thrown down this very widely exhibited type of behavior as a challenge to the mechanists.

Dr. Watson and those who think with him are apt to regard a person like myself as an old fogey, a survival, a fossil, a figure that has stepped right out of the 18th or 17th or perhaps the 15th century, where he properly belongs. They think that we are mediaeval metaphysicians rather than men of science. But in reality it is Dr. Watson and Professor Loeb and their fellow mechanists who have the closed mind, who, without clearly knowing it, start out with a metaphysical assumption or prejudice which colours and shapes and limits all their thinking. It is they who are belated and befogged in the metaphysics of a bygone century. They commonly assume that they have behind them all the great force and authority of the physical scientists. But in this they are mistaken. It is not the physical scientists who are guilty of the error of trying to bring human nature within the narrow bounds of mechanistic science. It is biologists and psychologists without first-hand knowledge of physical science who do this. The great pioneers and leaders of modern physical science from Faraday to Clerk-Maxwell and Kelvin have avoided this error.

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[1] Let no one infer from this passage that I am a Freudian. Though you cannot be both a Freudian and a Watsonian behaviorist, you are not compelled to choose between these two doctrines. Fortunately there remains open to you a third possibility, namely, psychology.

[2] *Outline of Psychology*, Chapter VI, 1923.

I have here a pamphlet[1] recently sent me by Professor Frederick Soddy, of Oxford. Professor Soddy is one of the youngest and most distinguished of those physical-chemists who are exploring the structure of the atom and promising, perhaps one should say threatening, to release and harness for human purposes the vast stores of energy which they tell us reside within the atoms. He writes: "I have no claim or call to express an opinion on the reality of the existence of intelligence apart from and outside of life. But that life is the expression of the interaction of two totally distinct things represented by probability and free-will is to me self-evident, though the ultimate nature of those two different things will probably remain, a thousand years hence, as far off as ever." It is noteworthy that Professor Soddy speaks of the physical world, not as the realm of strict mechanical determination and of exact predictability, but rather as the realm of "probability."

He goes on to say: "It is simple now to indicate what to my mind are the two errors that hinder progress. Both are monistic obsessions due to the mind in its innate desire to reduce everything to its simplest terms ending by trying to reduce everything to its simplest terms. The first (error) links up the two ends of the chain running in diametrically opposite directions into a grand circle, and so gets the sublimated conceptions of the mental world inextricably mixed up with the physical. . . . The second error is perhaps more common in the sphere of economics. It may be called "Ultra-Materialism," and is the attempt to derive the whole of the phenomena of life by continuous evolution from the inanimate world. We begin with a nebula of primordial material condensing into ever more complex forms, first to the light and then the heavy elements, then to chemical compounds up to the complex colloid. By a continuation of the same processes such a complex results that it is continually decomposing and as continually regenerating itself. The inanimate molecules begin to live, and life then runs through its course of evolution up to man. This may satisfy a biologist, but it fails to satisfy me as a chemist. I cannot conceive of inanimate mechanism obeying the laws of probability, by any continued series of successive steps developing the powers of choice and reproduction, any more than I can envisage any increase in the complexity of an engine resulting in the production of the "engine driver" and the power of its reproducing itself. I shall be told that this is a pontifical expression of personal opinion. Unfortunately, however, for this argument, inanimate mechanism happens to be my special study rather than that of the biologist (or psychologist). It is the *invariable characteristic of all shallow and pretentious philosophy to seek the explanation of insoluble problems in some other field than that of which the philosopher has first-hand acquaintance.* The biologist has first-hand knowledge of animate mechanism and seeks the origin of it in colloid chemistry. The test of the hypothesis is not so much what the biologist as what the chemist has to say about it. The difference to my mind between dead and living matter is much that between Niagara Falls thirty years ago and now (between the water falling according to the laws of mechanism or of "probability" and the water falling as directed and controlled by human purpose, human needs, desires, and strivings) and is not to be explained by the laws which Niagara formerly obeyed, by the laws of pure probability, but by their opposite, the operations of intelligence, as typified in their most rudimentary form by Clerk—Maxwell's conception of the "sorting-demon." . . . Life, or animate mechanism, is essentially to my mind a dualism, and any attempt to subordinate either partner is fatal. But the economist is peculiarly liable to mistake for laws of nature laws of human nature, and to dignify this complex of thermodynamical and social phenomena with the term "inexorable economic law." Is it any wonder that such crude confusions, such triumphs of mental instincts over reason, experience and common-sense, have produced a general sterility of constructive thought?

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[1] *Cartesian Economics*, 1922.

Professor Soddy adds: "It is perhaps fortunate that we know nothing about the ultimate nature of the fundamentals of either the physical or mental worlds. We have pursued each so far as to know that both alike lead away from rather than toward the solution of the problems of life. The sublimated theoretical concepts in either case have long ceased to possess actuality. We have rather to find the interaction between their commonest forms, matter and energy on the one hand and will and direction on the other."

I recommend these reflections of a great physicist to the attention of Dr. Watson and his fellow mechanical psychologists; and especially the passage on "shallow and pretentious philosophy" and that on the "general sterility of constructive thought." Let them, reclining in their arm-chairs, put them in their pipes and smoke them. So long as we think as though our thinking were the mere play of language mechanisms, so long will our thinking be shallow and pretentious, sterile and lacking in constructive quality. For language mechanisms are as sterile, as incapable of constructive or creative effort, as all other mechanisms. No it is not the great physicists that mistake their working hypotheses for ultimate laws of the universe. It is biologists and psychologists of the type of Dr. Watson who do that and who dogmatically deduce from them the laws and limitations of human nature.[1]

I have time to take up only two points in Dr. Watson's reply to my remarks. He asks: Suppose that presently a biological chemist should put some inorganic matter into a flask and produce from it a living organism, what then will I say? I might fairly be content to reply that it will be time enough to deal with this case, when the feat shall have been accomplished. But I will go further. I will say, as Lotze said half a century ago, that the accomplishment of this triumph would not essentially alter the case. To suppose that it would do so shows logical incompetence. The achievement would merely show that the chemist had succeeded in bringing about such a collocation of matter and energy as is necessary for the manifestation of life.

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[1] Not all physiologists subscribe to these delusions. In saying that the basic conceptions of psychology have as good a right as those of mechanics to be regarded as fundamental to all science, and that perhaps the time may come when psychology will absorb physics, I am not talking through my hat. Nor do I stand alone in this. I would point to two of the ablest working physiologists of the present time, the Haldanes, father and son. Dr. J. S. Haldane's views are well-known. Mr. J. B. S. Haldane in his recent book, *Daedalus, or Science and the Future*, tells us that materialism has now become so mysterious as to be unintelligible, and that for the next few centuries we shall be explaining matter in terms of mind. The position is well stated in a recent article of the London *Times*, reviewing two books on psycho-analysis :—" Both Dr. McBride and Dr. Wohlgemuth," remarks the reviewer, " adopt the theory that every thought is a function of the brain in the sense of being the product, ultimately, of electrotonic, atomic or molecular movements. Memory is accounted for in the usual way by 'traces' left by previous stimuli in parts of the brain. In the present state of physiology this is doubtless a good working hypotheses. It indicates certain lines of research, and is thus an excellent servant in the laboratory. But both our authors seem unaware how exceedingly mysterious a theory it is, considersd as an explanation of consciousness. It is more than ever mysterious now that modern physics suggests that the concept of matter, and even the concepts of space and time, are merely what the mind has found it convenient to introduce in its attempt to understand the world. An explanation of mind in terms of matter and energy has nowadays a distinctly old-fashioned ring. If the theory be treated purely as providing a scheme according to which experiments may be planned, well and good. But is it much too mysterious to be regarded as a valuable contribution to the philosophic discussion." As Prof. Graham Kerr has said in a recent article: " It is of the very essence of scientific method that a working hypothesis must never be allowed to crystallise into a dogma. There is always a danger of this, for the mind of the investigator tends to be dominated, instead of being merely inspired, by the working hypothesis of the day." Dr. Watson and his like are dominated by the working hypothesis of yesterday, or rather of the 19th century.

Secondly, you will notice that Dr. Watson continues to harp on his main string, namely, his handling of young children. It is in the nursery that he claims the main triumphs of behaviorism. Dr. Watson has made many valuable observations on the behavior of infants It is on record, I believe, that he carried his infant to the zoological gardens, and there introduced him to each of the wild beasts in turn. And the baby merely stared and continued to suck his thumb. And, even when brought before the lion's den, the baby, although it was a true-born American baby, showed not the least trace of an innate tendency to twist the lion's tail; its *supinator longus* muscle showed never a quiver.[1]

I do not wish to belittle these observations on infants which Dr. Watson has so faithfully made and reported, and on which his great reputation justly rests. They are important contributions to knowledge. But I would insist that they have no essential relation to the mechanistic dogma, and that Dr. Watson was by no means the first to make use of such methods. To say nothing of Charles Darwin, and of Preyer, and of Miss Shinn, and of many others, I would point out that, after spending two years in behavioristic observations of savage men in the jungles and on the coral islands of the Pacific, I retired to my own nursery and there spent the best parts of ten years in making observations (mainly behavioristic) on my children. The results of those observations were presented in generalised form in my *Introduction to Social Psychology*, a book which was published when the Watsonian comet was still but a speck on the horizon.

It is natural enough that behaviorism should claim its triumphs chiefly in the nursery; so long as we are dealing with young infants we are necessarily confined to behavioristic methods of observation, because the child is unable to aid us with introspective reports. But that surely is a poor reason for refusing to make use of that aid when, in the course of development, it becomes accessible to us. I am moved almost to break into song to exclaim: "Oh! Mr. Watson, what a funny man you are!"

Let me say one last word. If you are moved by a natural impulse of pity for Dr. Watson, as he continues to repeat his ineffective formulae and to butt his poor nose against the hard facts of human nature, if you are moved by the admiration due to the gallant leader of a forlorn hope, the stubborn defender of an indefensible position, then, I say, do not behave like mechanisms, but rather yield to these natural human impulses and vote for Dr. Watson, for behaviorism, and for man as a penny-in-the-slot machine. Further, vote for him now ; for you may never have another chance. After a few years, if my reading of the signs of the times is not wholly at fault, the peculiar dogmas for which he stands will have passed to the limbo of " old forgotten far-off things and battles long ago " ; they will have faded away like the insubstantial fabric of a dream, leaving not a wrack behind.

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[1] If Dr. Watson had really made this particular observation, it would deserve to rank as evidence against the Lamarckian theory, alongside Weismann's famous experiment in cutting off the tails of white mice through several generations.

THE SOCIOLOGICAL WORK OF THE LATE DR. W. H. R. RIVERS

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In the earlier part of his scientific career, Dr. Rivers devoted himself to the problems which lie on the border line between physiology and psychology. He was indeed a pioneer in this field, and one of the first to plan systematic courses in experimental psychology in the world. In 1893 he lectured on experimental Psychology at University College, London, and in 1897 he was appointed to the newly-established Lectureship in Physiological and Experimental Psychology at Cambridge. A full account of Dr. Rivers' work in this field is given by Dr. C. Myers (*Psychology and Politics*), and I do not propose to discuss it here. There is, however, one feature in these psychological investigations which seems to be characteristic of Rivers' work in all fields of the science of Man. He was primarily interested in mental differences between individuals and races. Knowledge of them could in his view be obtained rather by an intensive study of a limited area than by an effort to compile masses of heterogeneous data, and the application of statistical methods to these data. This attitude is also to be clearly observed in his ethnological work generally, and more particularly in his discussions of kinship.

Dr. Rivers appears to have been drawn towards sociological inquiries as the result of his work in psychology. In 1898 he was invited by Dr. A. C. Haddon to join the Cambridge Anthropological Expedition to the Torres Straits, in which Professor McDougall, Dr. C. Myers, and Professor Seligman also took part. The importance of this expedition can hardly be exaggerated. It was the first occasion of the application of the methods of experimental observation to the study of the mental characteristics of the lower races. Dr. Rivers' own studies were mainly devoted to the problems of visual acuity, colour vision, visual space perception, diseases of the eyes, colour nomenclature; but it is clear from the reports of his colleagues, how much they were helped and encouraged by him in their respective fields.

His investigations, says Dr. Myers, "will ever stand as models of precise methodical observations in the field of ethnological psychology." It is probable that in addition to his more purely physiological work, these investigations will remain among the most permanent of the contributions made by Dr. Rivers to science. Similar investigations were afterwards made by him among the Todas of Southern India, (1901–2) during a visit to Egypt (1900), and in England (*Reports of the Cambridge Anthropological Expedition to Torres Straits*, vol. ii, pt. i; *Journal of the Anthropological Institute*, vol. xxxi; *British Journal of Psychology*, vol. i). The results of these comparative studies into the sensory acuity of the English, Papuans, and Todas may be briefly indicated. In the absence of definite pathological conditions, pure sense acuity is much the same among all these races. The alleged superiority of the savage is due not to sense acuity as such, but to powers of observation trained in certain very limited directions. Thus, for example, there is no substantial difference in visual and tactile acuity between the Todas and civilised subjects. In regard to smell the Todas were rather inferior. In regard to auditory sensibility the Todas and Papuans were inferior rather than superior, though the evidence was rather scanty. Colour blindness was more frequent among the Todas, who also show a defective sensitiveness to blue. Their nomenclature for blue is defective, which seems to support the general theory that defective nomenclature found among other races corresponds in some degree to a defect in sensitiveness. In his work on visual illusions he found that illusions depending on physiological conditions were experienced more strongly, those depending on psychological conditions, rather less strongly, by the uncivilised peoples than by Europeans.

Dr. Rivers' studies during this expedition were not confined to ethnological psychology. He also prepared elaborate reports on social organisation, marriage and kinship.

The interest in ethnological work which first found expression in this work endured all through Rivers' life. He became an active leader of sociological and anthropological study. He was President of the section of Anthropology of the British Association in 1911, when he delivered an important address on the methods of ethnology; President of the Royal Anthropological Institute in 1922; President of the Folk-Lore Society in 1920–21. He contributed a large number of papers to the learned societies and periodicals. Among his larger works are *The Todas* 1906, an account of his researches in Southern India 1901–2, which ranks among the best descriptive monographs of modern Ethnology; *The History of Melanesian Society*, 1914; important articles in the *Dictionary of Religion and Ethics*, dealing with marriage, mother-right, kin and kinship, and the Lectures on *Kinship and Social Organisation*, delivered by him at the London School of Economics in 1913. During the late war he became interested in psychopathology, and this led to important studies in the field of social psychology generally, and in particular in the problems of the application of the results of abnormal and medical psychology to social matters. (*Instinct and the Unconscious ; Psychology and Politics ; Dreams and Primitive Culture,* etc.).

He cannot be said to have worked out a systematic sociology, but the main lines of his thought can, it seems to me, be brought out under the following heads :—

1. Studies in Kinship and Social Organisation.
2. Problems of Methodology.
    - (i) Relation between Psychology and Sociology.
    - (ii) Criticism of the "evolutionary" method and his view of the "ethnological" or "historical" method.

1. *Kinship and Social Organisation.*

Rivers devoted a large number of writings to the problems of kinship, and it is in connection with them, if anywhere, that he claims to have achieved definitive results in Sociology. In particular he showed amazing assiduity and energy in his comparative studies of the so-called "classificatory" systems of relationship. Generally, by the Classificatory System is meant a system of reckoning kinship, in which the terms apply not to individual persons but to classes of relatives which may often be very large. Thus *e.g.*, a term like that of brother, which among ourselves is used for the male children of our own parents, is in the classificatory system applied to all male members of a group of the same generation. So, too, the term father would be used for all those whom the father would call brother, *i.e.*, all male members of the group of the preceding generations. So there is no distinction of term between brothers and sisters and those whom we should call first, second, and third cousins. Similarly with relatives on the mother's side. Thus the term for mother's brother would be applied to a large class of persons. Briefly put, the classificatory systems are noted (1) by the absence of a distinction between linear and collateral relatives, *i.e.*, the father is not distinguished from the father's brother, the mother is not distinguished from the mother's sister, brothers are not marked off from cousins ; (2) by the presence of distinctions between certain relatives whom we group together. Thus there is in general a definite distinction between the brother of the father and the brother of the mother ; and, generally though less frequently, between the sister of the father and the sister of the mother, whom we call aunt. The classificatory systems have been much discussed by Ethnologists ever since Morgan published his *Systems of Consanguinity* in 1891, but the problem has been much obscured by being entangled with the question as to the existence in early stages of human evolution of general promiscuity or group marriage. Dr. Rivers has stimulated inquiry anew by bringing forward a mass of new data and by formulating theories, which, whether they are finally accepted or not, are capable of being tested, and cannot fail to be suggestive to future inquirers. With his main conclusion few Anthropologists will quarrel. He is of the opinion that classificatory terms are not merely, as McLennan has suggested, forms of salutation and address, but depend upon social conditions and express social functions. He has shown that the nomenclature carries with it a number of clearly defined social practices, and implies social duties and privileges on the part of the people to whom it is applied. Indeed, Dr. Westermarck put forward a very similar view in the first edition of his *Human Marriage*, and has developed it more fully in his recent edition (Vol. i, p. 252 seq.). A similar position has been taken by other writers. (Despite Dr. Rivers' criticism of Kroeber, it seems to me to be also substantially his view, and I find it rather hard to understand Dr. Rivers' polemic against a psychological interpretation of kinship. Social rights and duties are exemplified in behaviour, and forms of behaviour are clearly psychological matters).

Dr. Rivers, however, goes much beyond asserting a general dependence of kinship terminology upon social conditions. He thinks there is a correspondence or correlation between social structure and kinship terminology. According to this view there are three types of social structure, viz., the exogamous clan, that based on the family as we know it, and thirdly that based on the enlarged family (Grossfamilie) or kindred. Corresponding to each of these three types of kindred, there exists a kin terminology. The classificatory terminology becomes explicable if it is shown to be connected with the social organisation based on the clan, *i.e.*, exogamous social group. Given a dual organisation, it becomes intelligible why a distinction is made between the father's brother and the mother's brother, between the father's sister and the mother's sister, and between the children of these relatives ; for, owing to the practice of exogamy the brothers of the father must always belong to a clan different from that of the brothers of the mother. A man must marry a woman belonging to another clan, and his brothers are equally eligible mates for her and her sisters. On the other hand, brothers and sisters, and generally members of the same clan cannot intermarry. The classificatory terminology is admirably adapted to mark off the father and the father's clan-members from the members of the mother's clan. There is thus a functional connection between the clan system and the classificatory nomenclature. Secondly, the terminology that is employed among ourselves is essentially dependent on the family. "The terms father, mother, husband and wife, brother and sister, are limited to members of the family of the speaker, and the terms father- mother- brother- and sister-in-law to the members of the family of the wife or husband in the same restricted sense. Similarly, the terms grandfather and grandmother are limited to the parents of the father and mother, while the terms grandson and granddaughter are only used of the families of the children in the narrow sense. The terms uncle and aunt, nephew and niece are used in a less restricted sense, but even these are only used of persons who stand in a close relation to the family of the speaker." The only term we use in a very wide sense—cousin—applies to persons who are outside the family proper, and have no special obligations or privileges.

Thirdly, the Semitic and Nilotic systems have a terminology to which Morgan's term 'descriptive' may be more properly applied than to ours. They distinguish four categories of cousin, and four kinds of uncle and aunt, *i.e.*, the father's brother, the father's sister, the mother's brother, and the mother's sister. This terminology Rivers argues is in harmony with a social organisation in which the relationships of the narrower family are clearly distinguished, but which requires terms for certain uncles, aunts and cousins of a more definite denotation than ours. Thus, *e.g.*, "the brothers of the father and the unmarried sisters of the father would be of the same social group as the father, while the brothers and the unmarried sisters of the mother would be of a different social group, which would account for ther distinctive nomenclature" (*Kinship and Social Organisation*, p. 80).

Dr. Rivers has not, as far as I am aware, studied the last two types of kinship in detail, but has confined his attention to the classificatory type. He claims, as we have seen, to have established a functional, or rather a causal, relation between the clan-organisation and the classificatory system. The evidence that he adduces is mainly derived from Oceania, and may be described as an essay in what logicians call the method of concomitant variations. He finds in Oceania two main varieties of social organisation. One of them is a very widely distributed classificatory system, which may be called the Turanian, and with it is associated a social structure which has the exogamous social group or clan as its unit. The other called the Hawaiian, is also a classificatory system, but it has certain peculiarities which approximate it to the descriptive

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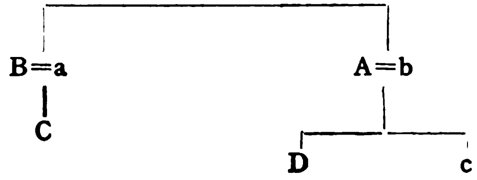
or family type of kinship. Thus, for example, there are no distinct terms for the father's brother and the mother's brother, for the father's sister and the mother's sister, or for the children of brothers and sisters. Further, in this system genealogical relationships take the place of the clan. Between these two extremes a series of stages may be indicated, passing gradually from the Turanian to the Hawaiian system, in concomitant variation with the transition from the clan organisation to the non-exogamous genealogical organisation. From these facts Rivers concludes that there is a causal relation between clan exogamy and the classificatory system, "There can be little doubt," he says, "that the classificatory system has been derived from the clan." Now, whenever the method of concomitant variations is used to establish a causal relation, certain precautions are requisite. In this case I do not think that Dr. Rivers has shown that the two sets of phenomena differ in nothing but the graded transition from exogamous to non-exogamous marriage on the one hand, and from the classificatory to the descriptive system of relationship on the other. There remains the possibility that both the clan and the classificatory system are produced or derived from a third common factor. It is clear that Dr. Rivers' generalisation requires to be further tested. Fortunately this has been attempted by Dr. Lowie ("Exogamy and the classificatory system of relationship," *American Anthropologist*), Vol. 17, 1915, and *Primitive Society*, in reference to the American tribes. His conclusions confirm the general connection between clan exogamy and the classificatory system. He shows that in North America the essentials of the classificatory system are found in threequarters of the main exogamous areas (East of Mississipi, East Siouam, and North-West Plain Tribes). On the other hand, the most important North American tribes, who are without a clan or gentile organisation (the Eskimo, Mackenzie River Plateau and the Californian River Indians) are also without the classificatory system. We thus obtain the important generalisations, where we find exogamous clans, we also find the classificatory nomenclature, and where there are no clans, there is no such nomenclature. Logically we have here an example of the joint method of agreement and difference. Accordingly the validity of our inference depends upon the extent to which the instances have been examined with a view of eliminating alternative possibilities. When this is done, it becomes clear that the empirical correlation between clan exogamy and the classificatory nomenclature cannot safely be forthwith interpreted in causal terms. The nomenclature aptly serves the requirements of a clan system, but may not be its product. The former may result in some cases, as

Dr. Lowie shows, from the levirate and sororate (p. 37). In other cases both it and the clan system itself may be the result of rules of residence and the transmission of property rights, which in certain circumstances lead to the establishment of unilateral methods of reckoning kinship (cf. *Primitive Society*, p. 162 seq.). We have here clearly an instance of what logicians call plurality of causes. The classificatory system may arise in different ways and is not necessarily produced by the clan. This accounts for its existence among some clanless peoples. It follows that we are not entitled to assert a necessary and universal connection between the clan and the classificatory system, and to infer as confidently as Dr. Rivers seems to do, that wherever the classificatory nomenclature is employed, the clan also exists or has existed in the past.

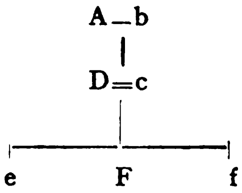
Generally, however, the empirical correlation between the exogamous clan and the classificatory alignment of kinship seems to hold, and this is a valuable result, even though we do not accept Dr. Rivers' view that they are necessarily or universally connected. Dr. Rivers has also dealt with the problem of group marriage, or, as he prefers to call it, sexual communism, and with certain peculiarities of the classificatory system from which he thinks the existence of certain types of marriage may be inferred. In his earlier essay Dr. Rivers was inclined to assert that the classificatory system had its origin "in some universal or almost universal stage of social development, characterised by a form of marriage, in which a definite group of men are the husbands of a definite group of women" (cf. "On the Origin of the Classificatory System of Relationship," *Anthropological Essays presented to E. B. Tylor*, 1907). The universality of this claim is modified somewhat in the *Lectures on Kinship*, but the very wide distribution of group-marriage is still strongly asserted. The evidence on Dr. Rivers' own showing comes from one part of the world only, and even that is of extremely doubtful value, despite the fact that Dr. Rivers regards it as "abundant." The most important points are these. In several parts of Melanesia the wife's sisters and the brother's wives are classed with the sisters, and it appears that this mode of nomenclature came along as a substitute for the practice of addressing their relatives by their personal names. The use of personal name implies the occurrence or potentiality of sexual relations. It is argued that the classing of the wife's sister with the sister instead of the use of the personal name, was adopted in order to make clear that women with whom sexual relations were formerly legitimate no longer belong to that category. Now even if we grant that there exists this peculiar association between the use of the personal name and the potentiality of sexual relations, we are still a long way off "organised sexual communism." Another argument that Dr. Rivers employs is equally open to objection. He shows that on several of the Banks Islands and in Pentecost there are terms used for a number of women who are potential wives. Thus, *e.g.*, a man's brother's wife, his wife's sister, the wife of his mother's brother, and the wife of his sister's son are indicated by the same term. Similarly, there is a common term used by a woman for her husband's brother, her sister's husband, and the sister's son of her husband. Rivers himself admits that some of these correspondences may have had their origin in cross cousin marriage, and others in the levirate, but he dismisses these alternative explanations in favour of the theory of an original communism. I do not see on what grounds we are entitled to make the transition from terms which may indicate nothing beyond potential relationships to the existence of a social organisation, when there was no family of the present type. Is Dr. Rivers justified in claiming (*Kinship*, p. 86) that his evidence "places beyond question the former existence of communism"?

Perhaps even more open to dispute are Dr. Rivers' conclusions with regard to the former existence of certain anomolous forms of marriage which he deduces from certain peculiarities in classificatory terminology noted by him in Melanesia. In the Banks Islands (Case I), for example, the same term is used by a man for his mother's brother's children as for his own children; conversely a person applies to his father's sister's son a term he uses for his father. This is explained by Dr. Rivers by assuming the former existence of marriage with the wife or widow of a mother's brother. Thus in the diagram.



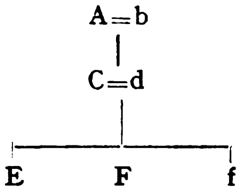
If C marries b, D and e will stand to him in the relation of children, while D and e, who formerly regarded him as their father's sister's son, will now call him father.

Another case is that of Pentecost (Case II). Here the mother's mother receives the same designation as the elder sister ("tuaga"); the wife's mother the same as the daughter; the wife's brother the same as the daughter's son. This is explained by assuming the former existence of marriage with the daughter's daughter. Thus:—



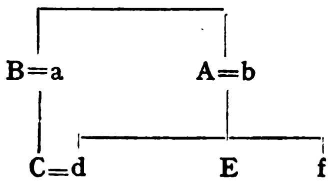
If A marries e, C who before was daughter of A now becomes his wife's mother. D who had previously been his daughter's husband now becomes his wife's father.

A further case is that found in Buin and Viti Levu (Case III). Here the father's father has the same designation as the elder brother. The son's wife is classed with the mother. This is accounted for by assuming marriage with the grandmother, the wife of the father's father. Thus :—



If E marries b the wife or widow of his father's father, the elder brother of F and f is now in the same relation as the father's father, and d the mother of E will now stand to him in the relation of son's wife (*i.e.*, C's).

A fourth case is explained by cross cousin marriage. Thus in Fiji the same term is applied to the mother's brother, the husband of the father's sister and the father-in-law. Similarly another term is applied to the father's sister, mother's brother's wife and mother-in-law. Again, another single term is used for the son of the mother's brother, the wife's brother, and the sister's husband Thus :—



The mother's brother of C is A, who is the husband of his father's sister b ; also A is father-in-law of C. C's father's sister b is also his mother's brother's wife (A's) and his mother-in-law.

To explain these forms of marriage Dr. Rivers assumes a stage of society in which the old men were so dominant that they were able to monopolise all the young women. In such a society the younger men would have to find wives from among women who had already been wives of their elders. Under a dual organisation an old man would be able to give his wife to his son's sons and to his sister's sons, who are of the same moiety as himself. Thus, there would result marriages with the mother's brother (Case I) and with the wife of the father's father (Case III). Similarly for the second case. Cross cousin marriage is explained as a modification of marriage with the wife of the mother's brother. The old men originally gave their wives to their sister's son, but later they gave their daughters instead of their wives. These conclusions form the basis of a tremendous hypothetical construction made by Dr. Rivers in his *Melanesian Society*. In his *Kinship and Social Organisation* he says in reference to them, " we have here a case in which the principle of determinism applies with a rigour and definiteness equal to that of any of the exact sciences " (p. 93). This presumably means that there is a causal connection between the classificatory terminology and these forms of marriage, so that wherever the former is found, the existence of the other may be inferred. I doubt whether here he will be followed by most anthropologists. Dr. Lowie has shown that the confusion of generations in the Banks case requires no special hypothesis. For with matrilineal descent my father's sister's son is classed with my father because he is my father's clansman. My mother's brother's children are classed with my children because my mother's brother, being my clansman, is my brother, and because two brothers regard each other's children as their own. The point is that in such cases the exogamous principal overrides the category of generations. Dr. Lowie quotes a similar confusion of generations among the Tewa and Hidatsa and Crow Indians, but there it is not limited to the person of the father's sister's child, but a single term is applied to the father's sister and all her female descendants, immediately and through females *ad infinitum*. We may well ask with him whether " we must construct hypotheses as to forms of marriage by which a man would become the son of his father's and sister's daughter's daughter and her successive female descendants, when all the facts are summed up by the plain statement that there is one word for a father's clanswomen " ? Dr. Lowie also offers an explanation of the Pentecost case on similar lines. Dr. Rivers does not seem to have taken enough trouble to exclude alternative explanations. In general it seems very risky to infer forms of marriage in the past from the existence of a common nomenclature for persons representing two or more relationships, without a detailed acquaintance of the ways in which the terms are used in actual life. (Dr. Westermarck has pointed out that such procedure would "result in the interesting discovery that the English were in the habit of marrying their sisters, p. 265). The explanation of cross cousin marriage as the result of a former dominance of the old men is also doubtful. Possibly it is due in some cases to the motive of keeping desirable belongings within the family circle. Parallel cousins, *e.g.*, children of brothers or of two sisters would belong to the same moiety, and be therefore debarred from marrying. Marriage with cross cousins, *i.e.*, with the father's own sister's daughter or the mother's own brother's daughter, would be the best available way of keeping property within the family.

2. *Problems of Methodology.*

There are three main counts in the attack made by Dr. Rivers and his followers on the evolutionary or, rather on the comparative method in sociology. In the first place it is urged that that method assumes that similarities in culture are due to the uniformity of the constitution of the human mind throughout the world, and that therefore, despite their similarities, cultures may be regarded as having developed independently among the different varieties of mankind. This *assumption* is vigorously challenged. It is denied that either similarities in external conditions or in the inner constitution of the human mind are adequate to account for the similarities of thought and custom that can be observed throughout the world, and it is claimed that these can only be explained as the result of contact or diffusion.

Into the merits of this latter theory of cultural development I do not propose to enter. It is being worked out with great vigour, and will no doubt lead to important contributions to social theory. I am concerned rather with the justice of the attack on the comparative method. To begin with, sociologists of the evolutionary school do not and need not deny the importance of diffusion and contact. Professor Westermarck has shown by quotations from Tylor and Frazer that both these representatives of British anthropology are by no means concerned to rely exclusively on the alleged similarity of the human mind in dealing with cultural similarities, but on the contrary insist that in many cases they are due to borrowing and diffusion. (*History of Human Marriage*, p. 2, seq.). A similar statement can safely be made of the American Anthropologists, who indeed have studied many cases of diffusion in detail (cf. Boas, *Rasse und Kultur*. Lowie *Primitive Society*, ch. i. Goldonweiser *Early Civilisation*, ch. xiv.)

Further, there is a certain lack of proportion in the criticism urged against the assumption of the psychical uniformity of mankind supposed to be made by the Evolutionists. Those features of culture which have the widest distribution are clearly correlated with fundamental and primary needs of man, like hunger and sex. Can anyone seriously maintain that these are not common to mankind ? When we go beyond primary needs and the methods of their satisfaction, we do in fact find greater variations and also limits to distribution. *Some* assumptions about human nature must be made, whatever method is employed. Indeed, the believers in diffusion from one centre do confidently attribute motives to the peoples of the archaic civilisation, and Dr. Rivers himself in accounting for Melanesian culture by a scheme of contacts is compelled to make certain assumptions in regard to the ideas and sentiments of the immigrant peoples. The comparative method as such does not need to assume anything beyond a general similarity of mental constitution among the different varieties of mankind. Its primary object is really classification. In other words, it seeks to work out a morphology of human institutions with the view of determining their real and essential nature and their arrangement in genera and species. When this has been accomplished it will be possible to test the theory of social evolution and to ascertain whether there is good ground for regarding human history as exhibiting a process of development from the general to the special. The fact of evolution is one thing, the agents or causes which bring it about are quite another. The dynamic agents are *prima facie,* environmental, biological, psychological and social. The contribution of each of these forces and their interaction must be determined in detail. In regard to the psychical agents, we have, I think, no right to assume at the outset either that they are or that they are not identical throughout all mankind. The object of the comparative method is to bring out differences as well as similarities. Only when the work of comparison has been achieved, and the real nature of the dynamic agents of social life determined, shall we be able to attack the problem of the differences and similarities of mental endowment among the different races of mankind. In the present stage of our knowledge, both sides of the controversy seem to indulge in too much dogmatism.

2. This brings me to the second count of the charge against the evolutionary method. This is directed against the use of psychological explanations in sociology. Dr. Rivers recurs again and again to this question (cf. *Kinship and Social Organisation, Address to the British Association,* 1911. "Psychology and Sociology," *Sociological Review,* 1916. *Psychology and Politics,*

Lecture I, and elsewhere). His position as far as I can understand it seems to be this. The business of sociology proper is to study the correlation sequence and historical order of social phenomena. In the course of this study it must and does make certain psychological assumptions and appeals to psychological laws. The relation between psychology and sociology is comparable to that between physics and chemistry, and geology. But while the latter can appeal to physical and chemical laws without questioning their validity, sociology is not in that happy position, since psychological laws are not really established beyond doubt. The Sociologist is therefore exposed to the constant danger of mistaking assumptions for explanations. Further, recent psychological work has emphasised the importance of unconscious mental processes, of sentiments and instincts as against conscious intellectual motives, and these are exceedingly difficult to introspect. Until the science of social psychology is more advanced, Dr. Rivers thinks we should be well advised to regard sociology and psychology as independent disciplines, though perhaps to be pursued concurrently and with the hope that ultimately the two studies will converge. Sociology must explain social phenomena by reference to social antecedents, and must use only terms derived from social life itself. In the present state of our knowledge, indeed, the study of social phenomena is more likely to throw light on psychology than *vice versa*, and in the long run psychological assumptions can only be verified in so far as they can be shown to yield consistent sociological schemes. Now it is certainly the case that the most important contributions to social psychology have been made not so much by professional psychologists as by students of other branches of human science, and by observers trained in other fields. But it is surely a mistake to imagine that because these latter did not write psychology *eo nomine*, they were not therefore psychologising. To me it seems clear that Dr. Rivers has not succeeded in drawing a clear line of demarcation between psychology and sociology, either in theory or in his own methodological procedure, and that this failure exposes many of his important conclusions to serious objection. Psychology is defined by him as the science of mental phenomena, conscious and unconscious. Mental processes are contrasted with social processes which it is the business of sociology to study. But surely social processes cannot thus roughly be separated from mental ones. For, on the one hand, mental processes, though of course they occur in the individual mind are social in the sense that they frequently depend on interaction between individual minds and are the result of social life. On the other hand it is clearly an inadequate definition of social processes to say of them that they "are processes which are carried out in conjunction with others, irrespective of motive" (*Soc. Review*, 1916, p. 2). Social processes are not mere forms of outward behaviour, but are penetrated through and through with mental relations. No doubt the attitude of the psychologist to social phenomena is different from that of the sociologist. The former is interested in the data of social life only to the extent to which they throw light upon the nature of mind; the latter is interested in mind only in so far as it helps him to understand the nature and genesis of social phenomena. But the two cannot without peril really be held asunder. This point may be illustrated from Dr. Rivers' own work. We have discussed above the way in which he uses the terminology of kinship as a method of arriving at early forms of marriage and social organisation generally. Now language is at once a social product and a mental phenomenon. For certain purposes linguistic terms may be studied by themselves, independently of the psychological atmosphere in which they have their being. But their full meaning cannot be realised except by one who observes their use in actual life. When, now, classificatory nomenclature is studied not merely as it can be seen from a set of tables, but as actually functioning in social life, it can readily be seen that though one term may be used to indicate relations which by us are designated by means of separate terms, yet the relations themselves are not identified or confused by the natives. The own brother is not, in fact, identified with the classificatory brother, and this is made clear by means of stress or intonation, or gesture, or attitude which, psychologically speaking, form part of language. A mere study of terminology without regard to its use in living situations is therefore likely to be very misleading if used as a guide to the forms of social organisation. We may also repeat in this connection an argument already used by Dr. Westermarck *History of Human Marriage*, I, p. 9). Dr. Rivers has laid great stress on the study of social survivals. But can survivals be really adequately interpreted if their mental aspect is ignored? "Before a custom is pronounced a survival it is necessary to examine whether it can be explained by present conditions or not, and to these conditions obviously belong the feelings and ideas of those who belong to it." Neglect of the psychological aspects has, as Dr. Westermarck clearly shows, often led to an interpretation of customs as survivals on the ground of very superficial and purely external resemblances between them and hypothetical customs in the past. Again, the method of ethnological analysis upon which Dr. Rivers lays so much stress is based on a study of a supposed correlation between a number of mutually independent cultural characteristics which appear in the same combination in different parts of the world. Is it not of the most fundamental importance to make sure that the cultural characteristics which are thus found are really and not merely externally similar, and can this be done without detailed psychological study? Moreover, the concept of diffusion as used by Dr. Rivers is essentially a psychological concept. In contrasting his own method with that of Graebner, he points out that unlike the latter he does not conceive of the blending of cultures as a merely mechanical process in which the component elements exist side by side readily distinguishable from one another, but as giving rise to elements of culture which may not have been present in the component cultures before contact had taken place. Not only so, but the influence of diffusion is best studied, according to Dr. Rivers, not by an analysis of the elements of material culture which may be readily transferred without blending, but of social structure which is deep-seated and permanent. But the latter cannot adequately be studied if psychological factors are ignored. The diffusion of elements of social structure is presumably a psychological process, taking place, among other things, by means of imitation, conscious and unconscious. Would not the method of ethnological analysis which as often employed by Dr. Rivers himself seems to consist in ascribing such processes to hypothetical entities in the dim past, be greatly helped and strengthened by a psychological study of diffusion as it goes on among ourselves? The mechanism and psychology of the processes by means of which ideas and other cultural elements spread within any one cultural area is presumably not very different from those that are involved in the contact of different peoples. The unravelling of the mental processes that go on at present in ourselves and in the simpler peoples, the determination of the psychological agents of cultural change is, therefore, of the most fundamental importance for the method of ethnological analysis itself.

3. I come now to the third and perhaps the most important point in the attack on the evolutionary method. Dr. Rivers and others have argued that speculations upon the evolution of human society cannot be fruitful unless they are preceded by an ethnological or, as it is sometimes called, an "historical" analysis of culture which has for its function to determine the sources or origins of cultural elements. "Without such an analysis it is impossible to tell whether an institution or belief possessed by a people, who seem simple or primitive, may not really be the product of a relatively advanced culture, forming but one element of a complexity which at first sight seems simple and homogeneous."

Thus, for example, an analysis of Melanesian culture shows, Dr. Rivers finds, that the belief in *mana* belongs to the culture of the immigrant and not the aboriginal population. It would then be unsafe to conclude that the belief in *mana* is more primitive than animism, for the immigrants certainly had the cult of the dead, and were therefore in an advanced stage of animism. Now this seems to me a very serious argument, but it is unfortunate that Dr. Rivers has not indicated clearly against whose applications of the evolutionary method his polemic is directed. It is not always clear whether he is attacking the evolutionary theory as such, or the use of the comparative method in sociology generally. Now these are by no means identical. The primary object of the comparative method is to classify the varied phenomena of human culture with a view to the establishment of a social morphology. Such a morphology would enable us to discriminate the essential from the inessential in social institutions, and would facilitate the search for causes, whether physical, biological, psychological or social. The work of classification is really preliminary to the application of a theory like that of evolution ; and, of course, can be carried out independently of it. For clearly classification as such has nothing to do with a temporal order. It may leave open the question whether the logical arrangement of forms or types achieved by it has corresponding to it a series of forms succeeding one another in time. Now, objection may conceivably be made and has been made to the notion of a social morphology itself. It might be argued that it is idle to compare any institution of a given area with " similar " institutions in other areas, because each area is a unity, having a peculiar self-identity, such that *its* institutions can only be understood in *its* cultural context. Accordingly it might be desirable for the present to abandon the search for correlations, and to concentrate on the intensive study of the varied aspects of a given culture-complex in conjunction with one another as expressions of the self-identity of its people. Such a view was put forward by Dr. Marett at the Conference of Sociology at Oxford a year ago, and seems implied in a great deal of recent American anthropological work. But it is clearly *not* the view taken by those who insist on a study of culture contacts, for the latter rests on tracing combinations of similar cultural elements in different parts of the world, at different periods of time. This method thus *assumes* that it *is possible* to establish correlations between different institutions and other cultural elements, and therefore the attack made by Dr. Rivers and his followers cannot be directed against the comparative method as such. The truth is what they have in mind is not the latter method at all, but the theory of a unilinear evolution. The existence of diffusion is clearly fatal to the view that all institutions or complexes of institutions must necessarily go through certain stages or phases in a regular order, since by the appropriation of alien ideas and instruments enormous leaps can be made without passing through the intermediate stages. But I am not aware that any sociologist of importance now believes in unilinear evolution. Even Muller-Lyer who, I suppose, is one of the most emphatic upholders of the *phase* theory of human evolution, expressly declares that development is not always in a single line, and " should be compared not to the single upright trunk of the pine tree, but rather to those leafy shrubs which produce several stems more or less directly rising from the same root, and which subdivide into branches and twigs " (*Phasen der Kultur*, Eng. Tr., p. 321). (1) A similar view is taken by Professor Hobhouse (2). But the abandonment of unilinear evolution does not dispose of the whole theory of social evolution, and we must now briefly inquire what would be necessary in order to establish the latter upon a scientific basis. Here I should like to refer to the method employed by Professor Hobhouse which, as I understand it, consists of the following stages :—

(1). An attempt to work out a morphology of social institutions with a view to determine their essential nature and their affinities.

(2). An attempt to pass from morphology to development. This necessitates the marking out of phases or stages of cultural advance. The criterion he employs is that of intellectual development as measured by the control which it makes possible of the conditions affecting human life and its environment. He then endeavours to show by a survey of human history that the development of institutions as measured by certain non-ethical criteria, such as scale efficiency, freedom, mutuality, is broadly correlated with advance in intellectual development, so that on the whole certain types of institution predominate in certain stages of culture. Two points require here to be noticed. The first is that the inquiry so far is non-ethical, and if it could be satisfactorily carried out would not in itself afford proof of progress. To do this a further enquiry is necessary, viz., whether the development described is of such a character that it satisfies ethical standards of value. This is a problem also attacked by Professor Hobhouse, but the first part of the inquiry may well be conducted without reference to ethical values, precisely as a biologist speaks of development

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[1] Cf. also Lowie *Primitive Society*, concluding chapter, and Boas *Rasse und Kultur* Ch.

[2] Cf. Morals in Evolution Ch. I.

without troubling about ethical implications. The second point is that the correlations established are as such independent of the time order. The problem of the temporal order of development must be studied independently by reference to the chronological facts supplied by history and archaeology. At this point no doubt the facts of diffusion and borrowing become important, but they do not seem to affect the general problems of social correlations as such. Be this as it may, the method of historical or ethnological analysis and the evolutionary, or rather the comparative method, are clearly not antithetical but complementary.(1) Both need a social morphology, and both rely upon social correlations. Moreover, in both it is necessary to distinguish between questions of historical genesis and questions of causation or agency. Were the theory of social evolution established it would still be necessary to seek for the causes or agents that would account for the processes involved in evolution. This can readily be seen from the case of biological evolution, which offers not merely a description of facts, but an explanation of them, by appealing, for example, to the theory of natural selection. So, too, the tracing of the wanderings of cultural elements does not in itself provide an explanation of these elements. Diffusion and borrowing are intricate processes, depending for their explanation, as Dr. Rivers himself shows in his valuable discussion of the mechanism of diffusion(2), upon many factors, and in the long run such an explanation must rest upon an analysis of the physical, biological, psychological and social forces operative in human history, to which the adherents of the comparative method also appeal when they pass from morphological classification to causal theories.

I should like now, in concluding this section on methodology to refer briefly to the main characteristics of the " historical " method (or method of ethnological analysis) as employed by Dr. Rivers himself. It appears to deny the possibility of independent origination of similar culture phenomena in different parts of the world, and *assumes* that identity of development is the result of contact or fusion of peoples. The first task of the ethnologist in relation to any area is accordingly to disentangle the ethnic elements which compose or have composed its population. This is done by an analysis of the most deep-seated and unobtrusive elements of its culture, viz., the social structure. If possible this morphological analysis is supplemented by a linguistic analysis. The method is

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[1] Muller-Lyer-a believer as we have seen in the phase theory, finds the driving force of evolution in group contact. *Ibid.* p. 311 329.

[2] *History of Melanesian Society.* Vol. II, ch. xxviii.

then to frame hypothetical working schemes into which the facts can be fitted. The test of these hypotheses is found in their inner consistency and their capacity to explain new facts as they come to our knowledge. (cf. British Association 1911, and *History of Melanesian Society,* II, p. 586). In addition, certain auxiliary assumptions are made. Firstly, the widespread association or combination of a number of mutually independent cultured characteristics is taken as an indication of a common origin. A second principle is that of organic connection. "When two elements of culture are found to be so closely associated with one another that they form constituent parts of one organisation, it is assumed that they belong to the same culture." Thirdly, there is the principle of "class association," which is really a special case of the second. In many parts of the world the ruling classes are believed to consist of immigrants in contrast with the mass of the population who represent the original inhabitants. This is alleged, for example, of Melanesia, Polynesia, and Indonesia. Accordingly if a certain cultural trait is especially associated with a given class, it is assigned to the people from whom that class is descended.(1) This method was applied by Dr. Rivers in his *Melanesian Society.* It is not possible for me here to discuss this work in detail, nor am I competent to do so. But certain points of logical interest may be made. Firstly, with regard to the three principles just referred to, it is clear that they rest upon the method of agreement. Now this method is hardly ever in itself conclusive, and in all cases needs certain precautions. It is necessary to make sure that the elements which appear in different contexts really are similar, and to eliminate alternative causes. I cannot feel sure that these precautions have been taken in arriving at the above principles, or in the application of them to concrete cases. Further, no objection can logically be taken to the formulation of hypothetical schemes. But the tests referred to by Dr. Rivers do not appear to be quite adequate. In addition to capacity for giving a self consistent explanation of the relevant facts, a hypothesis should where possible appeal to a *vera causa, i.e.,* an entity for the existence of which there is independent evidence, and secondly, before a hypothesis can be regarded as proved, alternative hypothesis should be as far as possible eliminated. Moreover, there is always danger, as the history of science has repeatedly shown, in correcting or supplementing one hypotheses by further hypotheses—with the result that the investigator comes to dwell in a world of his own construction, unchecked by verifiable facts. It has seemed to me that much

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[1] Cf. Rivers *History and Ethnology.* pp. 11-13.

in that most elaborate hypothetical reconstruction entitled the *History of Melanesian Society* is open to the charge of insufficient attention to these rules of method. On the other hand, in devising methods of investigation, both in the laboratory and the field, Dr. Rivers combined amazing thoroughness with intuitive genius. This can be seen clearly in his physiological and psychological work, as well as in the detail of his anthropological investigation. He was a pioneer in many fields, and in all he has left behind masses of stimulating and suggestive material. Again, though his attacks on the comparative method do not seem to be well grounded, his emphasis of the importance of the study of the spread and conflict of cultures, and his own contributions to these studies may well lead to important discoveries in sociology.

THE ROMANTIC SYMBOL

Novalis and the Blue Flower

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Friedrich Leopold von Hardenberg, who gave the German Romantic School its symbol of the Blue Flower, and is generally known by his pen-name of Novalis, was born on the 2nd May, 1772, at the Castle of Ober-Wiederstedt as the second child of Baron Erasmus von Hardenberg. After studying at the Universities of Jena, Leipzig and Wittenberg he went, in October, 1794, to Tennstedt in Thuringia, to be instructed in the art of practical administration. One day in November he rode over to the neighbouring village of Grüningen, and met in the house of a Herr von Rockenthien, the latter's stepdaughter, Sophie von Kühn, a girl not yet thirteen years of age, and it was his love for Sophie that coloured the whole of his subsequent mental experiences. It was the decisive factor of his life, and his mental attitude towards her was one of the strangest in the whole of literature.

In March, 1795, Novalis and Sophie became secretly engaged. After a time his passion seems to have cooled, and they really appear to have been near to a break, when the decisive event happened. Sophie fell ill. The fear of losing her, and perhaps also the romantic halo cast around her by her illness, stimulated his love, and as he said himself, "I almost love her more on account of her illness." Her illness transformed her in Novalis' eyes into something ethereal. He likened himself to a despairing gamester, whose whole future depended on whether a petal fell in this world or in the other. When Sophie died, two days after her fifteenth birthday, he wrote, "The petal has now fluttered over into the other world." He commenced a Diary, which he dated from the day Sophie died, every entry being noted as so many days since her death, and this Diary he kept for about three months. With penetrating self-observation he noted the most intimate impulses and emotions. He determined to die, but not by suicide. He determined to *will* himself to death, to concentrate on the thought until death came to him, and he was firmly convinced that as he belonged spiritually and absolutely to this dead girl, that as he was one with her, so he must eventually die from the very strength of this conviction. The soul was to consume the body. The will to die was what he called his 'ultimate purpose,' and again and again he recorded in his Diary the entry "My final purpose kept pretty firm," or "My resolve was firm." Then we read "I still appear to be unable quite to accustom myself to my resolve. Fixed as it appears to be, yet at times I become distrustful, since it appears to be so unattainably far off, so strange." And later, "My resolve has often been the subject of discussion lately: I have often thought of Sophie, but I still have frivolous thoughts." The following day he records: "My resolve received new life, became more fixed." We begin to see the struggle between his emotions and his reason. The first impulse of despair gives way to a systematisation of his grief. He now nurses it consciously, and the registration of his emotions becomes almost scientific. On the sixty-fifth day after Sophie's death, he writes in the Diary, "I must not start to reason closely about my resolve. Every argument based on reason, every illusive promise of my heart would be doubt, irresolution and infidelity." Then he begins to find reasons why he should die: "My death shall be a proof of my feeling for the sublime; genuine sacrifice—not a refuge—not an expedient." Later he says: "I have once more affirmed my resolve," or "My resolve has been quite firm. Only I still reason about it now and then." The strange thing is that in the midst of these continual affirmations of his will to die, he gets worried about the state of his health, and even records in the same entry that he took a purgative in the morning and his resolve gained in strength in the evening. And just as he continually asserts his intention to die, so there is hardly an entry which does not record his obsession with the image of Sophie. He goes out to her grave, visualises her sitting in a characteristic attitude on the couch, or speaks about her with much emotion to her former French governess. He keeps close watch on himself to make sure that he remembers her every day. Novalis *wanted* to grieve for Sophie, and the question is, did he love the dead girl or did he love his grief? Like everyone else, he had a vision, somewhat vague and undetermined, of an ideal love-object. This dream is generally incapable of realisation, because the longing is not sufficiently concrete to receive concrete satisfaction: what *is* found, however, is a focussing-point, more or less temporary, consisting of a central figure in a veil of illusion, and towards this the longing is directed. It is only in the surrounding illusion that the spiritual part of desire finds gratification, though the physical element finds satisfaction in the actual love-object. When, however, the spiritual longing penetrates and disperses the illusory veil, it does not find satisfaction in the love-object, the longing is deflected, and the outward and visible sign is that the lover's ardour cools. If the love-object is unattainable, then the illusion is never dispersed, and there are occasions when the lover sees no other way out than to commit suicide, since his spiritual condition is such that he cannot live without the object of his longing. In the case of Novalis, the matter was very different. Sophie was a child, and he was able to weave illusions round her which were not disturbed, since she never grew up, and it is easy to idealise a young girl.

In her lack of personality there was full scope for the imagination and sentimental dreaming. It is obvious that she was not able to enter into Novalis' spiritual world, as she did not care for poetry, and it is significant that his love reawakened when she fell ill. Novalis had a powerful impulse to idealise, and by her early death she was in his eyes transfigured. Henceforth his love for her became his religion. Illness and death had a fascination for Novalis. He says that he saw in illness new possibilities of introspection and an opportunity to observe the soul. In his *Fragments* he declares that " Illness belongs to the human pleasures, like death." Grief should really be the natural state : it is joy that should be looked upon as the undesirable condition, and he consciously employs the joy of grief to intensify his erotic emotion. He says in his Diary : " Whoever flees from grief no longer desires to love. The lover must always feel the deficiency, must always keep the wound open. May God ever preserve for me this indescribably dear grief, the melancholy memory, this spirited longing." He looks upon illness as perhaps the necessary beginning for an ardent union of two beings, as the indispensable basis of love. Whereas when Sophie was alive, his power of imagination and his day-dreams constituted a danger to their love, when she was dead these served to strengthen the bond between them by intensifying his longing for her unto a religion. He says himself : " What I feel for Sophie is religion—not love." The basis of religion and love is the same—a yearning which must eventually be centred on something or somebody. The early Pietistic upbringing of Novalis left an imprint on his whole subsequent life, and he developed the power of picturing to himself an invisible world, of living in his imagination and evoking spiritual images under the influence of an exalted emotion. From early childhood he possessed the faculty of superimposing a busy imaginative activity on his ordinary practical life. In the case of complete introversion, the imagination is entirely divorced from reality, and if the introvert is indifferent to his environment, he is able to find happiness by yielding himself to his world of dreams. This type of introversion is hardly met with in German literature, though it is known in Russia as " Oblomovism," after the novel *Oblomov*, by Ivan

Goncharov. One usually finds in German literature that the dreamer expects the world to conform to his dreams.

Novalis really led a dual existence. After his death there grew up around him the tradition of the ethereal being, more seraph than man, who was too innocent to live and so was taken by the Gods. As a matter of fact, Novalis was a very efficient and conscientious official, with a healthy capacity for work. He possessed a vividly sensual imagination, which was no doubt heightened by the dreams of longing, whose possibility of realisation was prevented when Sophie died, and his erotic impulses are described quite candidly in the Diary he commenced after her death. For example: " My phantasy was a little lascivious, but nevertheless I felt fairly well " ; " Felt lascivious from early in the morning till the afternoon " ; " Very lascivious " ; " Carried lasciviousness a bit too far " ; " Yielded entirely to lasciviousness," and so on. To judge from the frequency with which he recorded the fact that he had had too much to eat, he was no doubt also fond of the pleasures of the table. On the thirty-fourth day after Sophie's death he notes: " Early this morning sensual phantasies. Then fairly philosophical. . . . I have thought often of Sophie—but not with fervour. . . . I again had too much to eat to-day."

In this love for a young girl there was more of imagination than physical desire, and thus during her illness, and still more after her death, the partition between love and religion became more and more shadowy, until eventually he came to identify her with the Virgin Mary. Even in the Diary he puts down the phrase *Christ and Sophie.* The connection between eroticism and religion, which is rooted in our most primitive instincts, came to the surface in this love for a dead girl. The death of Sophie brought these unconscious instincts, so to speak, into Novalis' consciousness, though, of course, he himself did not recognise the significance of the identification.

The immediate literary result of the mood which was engendered by Sophie's death was the *Hymnen an die Nacht,* which may have been slightly influenced by Edward Young's *Night Thoughts,* a book that had a great influence on German literature in the 18th century, and which Novalis had been reading about this time. It is in these *Hymns to the Night* that Novalis depicts the successful consummation of his resolve to die. He found in his imagination a substitute for the failure to carry out his resolve in reality, and the *Hymns to the Night* are the literary expression of this substitute-phantasy.

There are six Hymns altogether, of which we need only deal with he first four, and the first one commences with the praise of Light.

The poet then turns aside to the sacred, inexpressible, mysterious Night. The world lies far away, and in his breast is a deep melancholy. He laments the absence of Light. Then suddenly, a presentiment stirs within him and disperses his sadness. Night also has favours to distribute—delicious balsam and the poppy seed. The poet is moved by a vague and inexpressible emotion, and the face of Sophie looks down upon him. He now despises the Light and blesses the departure of the Day. With the eyes which Night opens in us, we are enabled to see into infinity. They can see further than the stars, and they can look without the aid of Light into the depths of a loving heart. The poet then praises the Queen of the World, Night, the herald of sacred worlds within us, the guardian of blissful love, who has sent him his beloved. And he calls to his beloved : " Thou has shown me that the night of death leads to eternal life. Consume my body with ghostly passion, that my union with thee may become more ardent and the bridal-night endure for ever."

The second Hymn opens with a lament that the morning must always return, that the secret sacrifice of love may not burn for ever. Light has a definite portion of time allotted to it, but the sway of Night knows neither time nor space. Sleep is eternal, and is to be found not merely in the darkness of *actual* night, but also in the golden juice of the grape, the miraculous oil of the almond tree, and the brown juice of the poppy. It is Sleep which gives us the exaltation of the vine, the soothing balm of the oil, and the oblivion of the drug. It is Sleep which bears the keys to the Elysian Fields.

The third Hymn depicts the poet standing alone at the grave of Sophie, dissolved in grief and weeping bitter tears, hopeless and oppressed by unutterable fear. He looks around for help, unable to go either forward or backward, only clinging with infinite longing to his dead love, when suddenly the chain of Light, which binds him to the earth, snaps. The splendour of the earth disappears, and with it his grief ; his sadness dissolves into a new, unfathomable world. The exaltation of Night, the slumber of Heaven comes over him, and his unchained, new-born Spirit floats up over the earth. The grave becomes a cloud of dust, through which he sees the transfigured features of his beloved. Eternity rests in her eyes, he seizes her hands, and their tears become a gleaming, indestructible tie between them. It was the first, unique dream, and it was only from then that he conceived an eternal immutable faith in the heaven of Night, and in his beloved, who was the moon of Night.

The poet now knows (fourth Hymn) when the last morning will be, when Light will cease to disperse Night and Love, when slumber will be everlasting and one inexhaustible dream. Whoever has stood at this grave, the boundary of this world, and gazed across into the domain of Night, will not desire to return to mundane turmoil. He will long and love until the most welcome of all hours, the hour of death, comes to draw him down again into the source of life. Light can still rouse the weary poet to the toils of the day, and inspire him with cheerful life, but it cannot tempt him from the mossy grave of memory. He will willingly carry out the duties ordained in this life, but his secret heart will remain faithful to the Night and to his beloved. The Light cannot give him the faithful heart, the pressure of the hand, the caressing word, and Life offers no pleasure which is not outweighed by the raptures of Death. Everything that exalts us, bears the colour of Night. Night is the mother of Light, and it is to Night that the latter owes all its splendour. The day will come when Light will be extinguished for ever, and the poet feels that Light is ceasing to have any influence over him. Christ has shown that death is only the entry to real life, and has thus annihilated the resistance of Light to the ancient heaven of Night. The poet feels the rejuvenating flood of Death, by day he lives filled with courage and faith, by Night it is in the sacred ardour of Death that he is plunged.

We thus see how from the resolve to die, there develops in Novalis an imaginative world, centring round the spirit of Sophie. Just as he declares he will do in the fourth Hymn, he carries out conscientiously the duties of his practical career. He is at home in two worlds, but the world which means most to him is the world of his dreams. He consciously and intentionally fosters this shadowy world of make-believe which is a compensation for reality. He expresses anew the ancient symbol of the conflict between Light and Darkness, but this time the victory is with Darkness, which is the home of the spirit. That is not to say that Novalis' conception is pessimistic. On the contrary, it is intensely optimistic. Though this life is vain and full of suffering, there is somewhere beyond a realm of Night, timeless and spaceless, of which the Night and Sleep of this ephemeral world are but dim shadows. It is for that immeasurable and eternal Night that Novalis feels his immense nostalgia ; it is the great Mother, the *Urwelt*, the symbol of complete union ; and in the centre of this Night is Sophie, his beloved, with whom he will celebrate an eternal bridal-night, with whom he will consummate the marriage that was denied him in this world. There is a strange connection between Love and Death. His longing for Sophie was at the same time a longing for Death. The different elements of eroticism and the death-cult which we saw in the Diary as definitely separate emotions, have in the *Hymns to the Night* become fused into one emotion, or at least, if one may not psychologically refer to them as one emotion, they are so bound up with each other that they cannot be separated. The thought of death inspires in him an erotic emotion, and his love is at the same time a *Liebestod*, a love-death.

The third element in the mystic trinity of Novalis' phantasy was Religion. Religion, Death and Love. The love for his dead bride becomes fused with the love for Christ, and the final *Hymn* concludes with the words, " Let us descend to the sweet bride, to Jesus, the Beloved ! " and as has already been mentioned, one of the notes in his Diary consists of the three words " Christ and Sophie." In the *Fragments* he says, " Love is thoroughly pathological : hence the wonderful significance of Christianity." Novalis has also written a number of *Spiritual Songs*, which give further proof of the bond between the erotic and the religious emotions, and show how the one decisive event of his life fused in him love and religion. In a *Communion Hymn*, he gives a rather repellent picture of the merging of the individual in the universe ; so that the sexual act appears under the guise of a meal and the Communion affords an erotic gratification.

The greatest work of Novalis is the novel he wrote during the last two years of his life, and which he never lived to complete. *Heinrich von Ofterdingen* was to be the romantic counterpart of Goethe's *Wilhelm Meister*. As the hero of Goethe's novel gradually comes out of his world of dreams into the active stream of life, and comes through disillusionment more and more into touch with reality, so Novalis' hero is to start from an ordinary mundane existence to arrive eventually in a world of dreams. Goethe strikes the balance between the poet and the man of the world, but Novalis as a poet has no use for the world. Goethe demonstrated the danger of that vague idealism which is lacking in thought and harmony, and in his novel, Romanticism comes to grief. The Romanticists affected to despise the rational side of man's nature, while Goethe stands with feet firmly planted on the earth. Novalis, therefore, proposed to write an " apology for poetry," a novel where the hero should turn from the world of action to the world of poetry, instead of the opposite, as Wilhelm Meister had done. This attitude of Novalis towards *Wilhelm Meister* epitomises the attitude of the Romantic School towards Goethe. They were attracted by Meister, since he also was possessed by longing, but they looked upon his rejection of their vague idealism as a betrayal of poetry.

Novalis' novel is divided into two parts, of which the first is entitled *The Anticipation.* The youth Heinrich lies restlessly on his couch, thinking of a strange visitor who has related a story about a Blue Flower. He falls asleep and dreams of this flower, but is awakened suddenly by his mother. His father tells him that *Träume sind Schäume* dreams are bubbles, but it appears that he also had once had a dream about a mysterious flower, without, however, pursuing the matter any further. Heinrich is to prove that dreams have a significance after all.

The greater part of the first book is taken up by a journey which Heinrich makes with his mother in company with a band of merchants to the city of Augsburg. On the way he has various adventures, including a meeting with a captive Eastern girl, and with a hermit named the Count of Hohenzollern, who shows him a book where he sees pictured himself and incidents of his past life. He sees his parents and his friends and even the Eastern girl, but they wear different clothes, and they seem to belong to another epoch. A large number of figures seem familiar to him, but yet he cannot say who they are. Then he sees his own future, among other pictures one of himself with a guitar on his arm being presented with a laurel-wreath. The end of this mysterious book is missing. At last the company arrives in Augsburg, at the house of old Schwaning, Heinrich's grandfather, and here, during a feast, Heinrich meets and falls immediately in love with Mathilde, the daughter of the poet Klingsohr, for whom Novalis evidently took Goethe as his model. The praise of poetry runs like a thread throughout the story : it is the *Leitmotiv*, and the first book concludes with the relation by Klingsohr of a fairy tale, which prophesies the return of a Golden Age through the instrumentality of Poetry.

The second part of *Heinrich von Ofterdingen* is called *The Fulfilment*, and the world of reality disappears more and more, to give place to the supernatural. Mathilde has been drowned in some unexplained way, and Heinrich is in despair. He meets a young girl, Cyane, who says she is the daughter of the Count of Hohenzollern, and that she is sent to him by the Virgin Mary. She leads him to an old man, the physician Sylvester, and the story breaks off abruptly in the midst of a conversation between the two men. The poet Tieck has endeavoured to give an idea of the continuation of the story from conversations with Novalis, and from the latter's papers. It appears that Sylvester is the same old man who had entertained Novalis' father when the latter dreamed of the Blue Flower. Cyane is the daughter of the Count of Hohenzollern, had lost her brother at an early age, and had herself been saved in some strange way from death. She tells Heinrich his own story, as though she had once heard it from her mother. She sends him to a monastery inhabited by dead monks, and after living with these for a time, he suddenly finds himself in Italy, which is now split by internal wars. He takes part in these wars, but is later thrown by a tempest on the shores of Greece, where his mind is filled with the treasures of antiquity. He then visits the Orient, and finally returns, sated with experience, to Germany, where he makes the personal acquaintance of the Emperor Frederick II, and becomes a great Minnesänger. Thus in a new and larger way than in the first book, he experiences life and death, war, the Orient, history and poetry, and then turns back into the world of the spirit. After discussing with Klingsohr strange tokens and presentiments, he arrives in an allegorical world, a world out of space and time. He hears somebody singing an old song, describing a deep pool in some secret place. There awake in him long-forgotten memories, he goes to the pool and finds a golden key, which a raven had once stolen from him, and which he had never been able to find again. It had been given him shortly after Mathilde's death by an old man, who had told him to take it to the Emperor, and the latter would tell him what to do with it. This Heinrich does, and the Emperor shows him an old document, which says that the man who brought the key would find in a hidden spot an old talismanic jewel, a carbuncle belonging to the crown, in which the empty space was still unfilled. On the way to find this jewel, Heinrich meets the old man who had first told him and his parents about the Blue Flower. He goes into the mountains, and is followed by Cyane. Soon he comes to a wonderful country, in which air, water, birds and animals are of a quite different nature from those in this world. The fairy-world becomes visible, the real world is looked upon as a fairy-tale. He finds the Blue Flower, and it is Mathilde, who is asleep and holds the carbuncle. A little girl, the child of Mathilde and Heinrich, is sitting by a coffin, and through her he becomes rejuvenated. This child is the *Urwelt*, the Golden Age which is to come at the end. Heinrich plucks the Blue Flower and releases Mathilde from her enchantment, but he loses her again and becomes literally petrified with grief. After further adventures he again meets Mathilde, and becomes monarch in a Kingdom where the seasons are united and the sun never sets.

The strangest thing about the story is the way in which various characters are identified with each other. Mathilde is also Cyane and the Eastern girl, and also the Blue Flower. Klingsohr appears again as the King of Atlantis. Sylvester is, among other incorporations, also the Count of Hohenzollern, and probably also Heinrich's father. And in a similar way, all the experiences which existed in the first book merely in the boy's imagination as presentiments, occur again, and are realised as actualities, in the second part, in *The Fulfilment.* The past, the present and the future are bound up together. At the beginning of the second book, Heinrich had gone out into the world as a pilgrim after the death of Mathilde, and in a new love he found again the old one, for Cyane was also Mathilde. Novalis had early occupied himself with the question of the transmigration of souls, and it is possible that he regarded these different incarnations of the same spirit in that light. The development of Heinrich von Ofterdingen is a symbolical representation of Novalis' own development, and demonstrates the importance of love and poetry for the re-creation of the Golden Age. As in the *Hymns to the Night,* the fulfilment is to be an eternal celebration of love. The characterisation of Mathilde is perfectly colourless, and she does not give us any clue to the character of Sophie von Kühn, but just as in Novalis' own life, it is the death of this girl that starts Heinrich on his poetic career, and as in the case of Sophie, the idea of the dead Mathilde becomes fused with the idea of the Madonna.

After the death of Mathilde, Heinrich hears her voice bidding him take the girl (Cyane) who will come to him as she will be a consolation while he still remains on earth. Novalis appears here to express the conviction that there was no contradiction between his eternal love for Sophie and his attachment to another woman, Julie von Charpentier, for, strange to say, Novalis had again become engaged, only eighteen months or so after the death of Sophie. It is hardly possible that he regarded the spirit of Sophie as having migrated into Julie, since the latter was the older of the two, and the question would have arisen as to whose soul was occupying Julie before Sophie died, though the category of time may not hold good for the spirit-world. To judge by this passage in *Heinrich v. Ofterdingen,* Novalis might have looked upon her as a substitute during his mundane existence, but it is quite likely, since it was rather a symbol that he was in love with and not Sophie herself, that he to some extent identified her with Julie, finding in both the common element of *das ewig Weibliche.* Not that there is any permanent, absolute quality which can be designated as the "eternal feminine," any more than there is an "eternal masculine," but these qualities which each sex sees in the other are symbols of the same thing, they are both aspects of the "Blue Flower." When Heinrich dreamed of the Blue Flower, he saw in it a woman's face, and when he at last found it, it was Mathilde. It is significant that when Novalis describes landscapes, he describes distant landscapes, and his motives are mostly distant themes, such as the Orient, Antiquity, the Golden Age, etc. The reason why distance lends enchantment to the view is that illusion is essential for dreams, and the Blue Flower can never be found ; it is only to be sought.

The famous Blue Flower of Romanticism is the symbol of the unattainable, of the object of that vague longing which cannot be satisfied, or even defined, because its roots are in the unconscious.

There is little more to relate of the life of Novalis. In August, 1800, Novalis was promoted to a post which enabled him to look forward to an early marriage with Julie, but his hopes of domestic happiness were no more to be fulfilled this time than they were before. He had betrayed symptoms of consumption five years ago, and Sophie's death had helped to accelerate the progress of the disease. His condition now became steadily worse, and on the 25th March, 1801, in the 29th year of his age, he died. His life, like his work, remained a fragment, and another was added to the long list of German poets who were cut off before they could fulfil the promise of their youth. He was the prophet and genius of the Romantic movement, and he did not live to see its decay. Practically the whole of his literary work falls within the last three years of his life, and when one considers the contrasts that appear so vividly even within that small compass, it is impossible to say with what riches he might not have endowed German literature. A man who could frame for himself such a vivid inner psychic world and yet not lose his grip on reality, who could ' dream and not make dreams his master,' might have been a creative influence in an age when the old world was falling to pieces and the new epoch had not yet arrived. Many dreams were being shattered, and the way was being prepared for the age of philosophic Pessimism, but as yet there was no systematisation of Weltschmerz into a philosophy. It was because they were unable to express concretely what they only felt vaguely, to give plastic representation to the supersensuous, that so much of the work of the Romanticists remained fragmentary. It is fruitless to enquire how far the germs of consumption, which was no doubt inherited, affected Novalis' mental attitude towards life and its problems. As Heine says, the rosy hue in the writings of Novalis is not the hue of health, but perhaps it is true that illness provides new opportunities to observe the soul, and it is in Novalis, its most problematical figure, that the psychology of the Romantic movement can best be studied.

THE ORIGIN OF MALIGNANCY.

Cancer represents a case of cell-degeneracy, the ***raison d'être*** of which, briefly, is disloyalty. Ruskin expressed a universal truth when he declared that the noblest word in the catalogue of social virtues is "loyalty." Nature, too, has her sociality, and in that sociality, also, loyalty is an indispensable virtue. Cells and tissues must be loyal to the polity which is the individual body; and organisms must be loyal to the biological community of which they are members. There is no escape from this rule, save on penalty of disease or degeneration. Our very protoplasm, be it remembered, is constituted by a partnership of the units, *i.e.*, of the chemical elements composing it. It is the fact of loyal partnership which raises the community of elements from the chemical to the biological stage of life. Henceforth integration and health can be maintained only by a sufficiency of partnership. Healthiness of the protoplasm is as much a matter of sociology as of chemistry. Everything that aids the partnership of the units contributes to health. Everything which, on the contrary, tends to disturb this vital co-operation, causes disease or disintegration of some sort. This implies that in the world of life there obtains an imperative urging to duty, to loyalty, to co-operation, to honest labour. In Sir Oliver Lodge's words, a necessity for honest effort exists in the very innermost constitution of nature. It is this imperative which the cancer cell disobeys. Owing to some evil influence, the cancer cell has come to flout the law of the members. It fails in the performance of duties, it is aberrant. It makes wrong use of its inherent power of autonomy, and it, hence, becomes malignant. Cancer-cells batten selfishly on the bodily substance, without duly metabolising it, storing it, or transmuting it to the benefit of the body as a whole. In the place of wholesome activities, they are occupied in begetting a redundant progeny of a like undisciplined and degenerate order.

What, we must ask, are the influences favouring such direful consummation? What are the influences chiefly promoting the evolution of criminality in Nature?

"Influences" is a coming and fertile chapter of science. Much more, I venture to predict, than we are at present aware of, will in the future come under the heading of " influences " and connected habits. Owing to " influences," a good habit is apt to become associated with another good habit, whereas a bad habit becomes easily associated with others that are evil.

Malus malum vult ut sit sui similis. Not the least danger of the evil cell or evil organism, the parasite, is that it has an interest in evil. Everything that promotes our dissolution is to its " good." Parasites often abet each other. Hence the danger of a lazy compliance with low conditions, which is apt to invite and to tolerate parasitism.

Foremost amongst our various forms of compliance with evil are our biologically unsuitable feeding habits, our imitation of carnivores and scavengers, with which we should have nothing in common. For man is *not* a scavenger. The flesh and the blood of lower animals ingested in our system would fain determine us as though we were to become one of them, *i.e.* in an inferior direction, incompatible with our status as men, and *pro tanto* evil. Hence, as was shown by Prof. Ch. Richet in his study of the serum-disease anaphylaxis—the opposite of protection (phylaxis)—the blood has to resist, and normally does resist, " influences " derivable from such substances. Normal digestion, according to Richet, entails neither (protein) intoxication nor anaphylaxis. His experiments have forced upon him the inevitable conclusion that anaphylaxis sometimes does develop as a result of alimentary ingestion—especially in those who eat fish, molluscs and crustacea.

Now the fundamental feature of anaphylaxis is the modification of the cells of the organism—which is quite likely, I should add, to become a predisposing cause (through alimentary anaphylaxis) of that further retrograde cell-modification which is cancer. It is, says Richet, as though the foreign proteids, chiefly of animal, origin (for fruits and vegetables are not known to have caused anaphylaxis) once they are allowed to penetrate the organism with some freedom, tended to modify its fundamental chemical properties, to enter into the protoplasm and to alter its nature—symptoms of a grave order indeed. In his own words: " Just as we have a *psychic* personality by which each is himself and not another, so we have a *humoral* personality which also makes each distinct from another: this latter personality is due, absolutely to the multiple ingestions and intoxications which have altered each of us by leaving indelible effects."

It is clear that the frequent ingestion of flesh meat exerts influences which are detrimental and, biologically speaking, undesirable. Such habituation yields forces which are apt to determine us, or our organs, in a retrogressive direction. The physiological intolerance normally exhibited by the body to the assimilation of such substances shows that, as Richet states, a defence of the species quite as much as of the individual *i.e.*, a resistance to degeneration is here involved. There is much other evidence to show that foods which appear to be a boon to the individual may yet be a curse to the species. All of which should be constantly borne in mind, particularly by those engaged upon cancer research. Remembering, moreover, to what lengths retrogression may go in organisms engaged upon (merely expedient) adaptation, we cannot be surprised to find that our own body may adapt itself retrogressively to some extent to the habit of meat eating. The habit is alluring, painless and insidious. Cancer, too, is painless in the inceptional stages. But the adaptation to meat eating is none the less purchased at the expense of health and of survival, and the loss of vitality resulting from the habit and the degeneration so induced become conspicuous in due course.

But, it will be remonstrated, all of us have on occasion to partake of food, and, in order to do so, to encroach upon the lives and substances of other organisms. Precisely. But much, very much, depends upon the kind of *modus vivendi* that we establish in the endeavour to satisfy our alimentary requirements. It is here where biology is able to come powerfully to the aid of physiology, and even of psychology, for our psychic personality depends largely upon the groundwork presented by our humoral personality. Biology is able to draw the line between good and evil so far as concerns the mutual accommodation of organisms, even in matters of food and feeding. It can show which line of behaviour is legitimate and good, and which is on the contrary evil and to be avoided.

Nothing could be more auspicious to a successful attack on cancer than an understanding of the biology of food. The more I pursue that study the more it fascinates me. Cancer, be it remembered, is in many ways a biological problem. It is not confined to human beings, but occurs also amongst plants and animals. Here, as there, it is the nemesis of transgression against nutritional law, as can be fully shown. It is not for nothing that cells turn malignant. The provocation is afforded by the behaviour of the organism itself, which has become malignant in an important biological sense. It is not only the cell which is at fault, but the whole body ; and not only the whole body, but, frequently, the whole species. Did not Sir Astley Cooper declare that " he who regards cancer as a purely local disease has a very poor conception of what cancer really is " ?

The effects of dieting upon cancer have come into prominence of late years. Dr. Robert Bell, who for holding novel dietary views has first been ridiculed and even dubbed a quack, believes that the disease is produced by a form of blood poisoning due to the development of autotoxaemia from over indulgence in flesh foods, a view for which there is much biological justification, as will be seen in the sequel. In view of the prevailing perplexity as regards causation, we cannot do better than study the biological factor. Such study is the most apt to remedy the bias we generally feel in favour of certain foods for no other reason than that we have somehow got " fond " of them, which, more often than not, means that we have become enslaved to them. Such enslavement, as I am well aware, affects men of science equally with the man in the street. We can never get far outside ourselves, not even men of science. The personal equation pervades the whole of our life. It is well, indeed, to recognise that fact, humiliating though it may appear to some minds.

Having muzzled kings and priests, modern man obliges even his mentors in matters of health to pander to his perverted appetites, " to let foolish patients have their own way," as was recently stated by a physician. Hence, too, the chief causative factors of cancer have never been probed as deeply as they should have been, and, hence, also the chaotic state of our knowledge on cancer and for that matter on disease in general. Civilised man, it would seem, is becoming increasingly resigned to the virulence of death in his ranks. He is too thoughtless to know of any other solution of the population problem. And he is too apathetic to make a move in the right direction. He is disinclined to pay the price for health, not realising what precious gifts he is throwing away. One feels inclined to apply to our whole civilisation the words used by the socialist Bebel to characterise the heedlessness of pre-war Germany : nothing but a great misfortune can save us. We are too easily the dupes of what we love ; and that which we love is often doing us more harm than good. " Eating," says Samuel Butler, " is a mode of love, hence we say we love roast beef." Love, however, is proverbially blind ; and if it can at times move the sun and the other stars, it can also stultify many just scruples of the intellect. The lover of roast beef forgets that his case is not dissimilar to the " love " of the cat for the mouse, out of which " love " there is born a tapeworm common to both, and needing the body of each of the two to complete the cycle of development.

The more I study the inter-action of life, the more I become convinced that affinities of this kind tend to alienate the organism from the powers for good implicit in the universe. " Every sin," says Sir Thomas Brown, " the oftener it is committed, the more it acquireth in the quality of the evil," and this holds good also of biologically unsuitable feeding habits. They are attended by a *facilis descensus*. The habit of devouring other creatures very generally has the concomitant of infection and disease, as though a predaceous species had given hostages to Satan. There is no disguising the fact that the notions of hell, fantastic though they were, stood for a truth which we cannot ignore. Because of our frequent abuse, because of our faith in competition rather than in co-operation, it has come to pass that the seamy side of biology has even been taken for the norm of things, and the negative factors of evolution for the positive. We live in the midst of Nature and know her not. We stumbled across the negative factors of evolution before we recognised the positive; we built on the phenomena of disease rather than upon those of health; we argued from artificial and mostly pathological processes as to the norm of the natural process, from the lesser and inferior as to the larger and superior, from abuse as to use. We took greater interest in a law-breaking than in a law-abiding organism, we knew the deadliness of the alkaloids before we realised the beneficence of the Vitamins. We praised competition before we appreciated co-operation, and warfare before industry. Is it a wonder we are puzzled and perplexed?

The best way out of the quackmire is a broad biological inquiry into the origin of disease. It will show that disease, degeneration, and inferiority are rife amongst those which are surfeited, or sluggish, or predatory; and it will demonstrate that, however unpalatable the truth may be, the owner of the cancer cell is more blameworthy than the cell itself. It is all important that we get down to first principles, to those positive principles upon which the economy of Nature is pre-eminently based. I have found that it is primarily the biological adequacy of certain food substances which renders them the proper food for man, that the most adequate substances are the spare-products of the plants, *i.e.* the "kindly fruits of the earth," and that the secret of this adequacy is ultimately economic: the adequacy is the outcome of a primeval nexus of mutual service between the vegetable and animal kingdoms. The plants stand in a relation of biological and physiological reciprocity to us; and this portentous relation, and the implied pact of partnership, provide both the adequacy and the legitimacy of appropriation. The Symbiosis between plant and animal is hallowed by a thousand ties of natural piety. What at first glance appears to be the least propitious, namely, that the fruit of plants should be eaten by animals, is in reality often a boon to both plant and animal, contributing to their joint evolution. In the "Norm-Symbiosis" between plant and animal there is give and take *in excelsis*, wholesome and legitimate, since honouring the law of contract allows community life to proceed smoothly and happily. Benefit is the end of Nature, but for every benefit received a toll is levied. Is it reasonable to suppose that Nature, the great economist, has left the *modus vivendi* between plant and animal to mere chance ? If ever there was need and also scope for law and order in the world, it was there, *i.e.* in the inter-relations between plant and animal.

It merely requires a little closer scrutiny than that hitherto brought to bear on the matter to perceive that Nature does not sanction irresponsible indulgence in food. It is vital to an understanding of the rights and wrongs of communal life, be it among cells or organisms, that this realisation should be made. Provided the animal comports itself in a biologically righteous way, the plant is able to supply ample provisions for the purposes of mutual animal and vegetable evolution. Hence the life of service and of moderation, involved in such mutual industry, is eminently sanctioned by Nature. It implies a life that *ipso facto* moves with the " spirit of the times," thus avoiding degeneration, a matter of the utmost importance.

It is a fact that those animals which subsist exclusively on vegetable food usually appropriate only portions of their food plants, portions which the latter can well afford to spare and to exchange for services. It is equally true that the really progressive species are those marked by temperate habits of life. We are beginning to realise that there are foods which are propitious to harmony and integration, whilst there are others which, on the contrary, excite disintegration. The former may be termed the earned foods ; the latter the unearned. All of which shows the need of discrimination.

It is folly to believe that food could have gone unregulated. It, too, had to be regulated according to fundamental economics. For things refuse to be mismanaged long ; and they can be managed well only on sound economics. According to such economics, a system of mutual aid and mutual forbearance is superior to one of mutual plunder.

Darwin perceived that great advantages in health and in evolution must accrue to both partners when they co-operate, as in the case of the symbiotic intercourse between flower and insect, for instance. But he did not pursue that line of investigation consistently and deeply enough to see that what is involved in a fundamental principle of health and of progress, and that, inversely, violation of this vital principle, *i.e.* a divorce from Symbiosis, is the most general cause of disease and of degeneration. Evolution is still in its infancy. The most important lessons remain to be learned. Seeing that the ultimate facts are invariably economic facts, we should start the evolution theory from premises altogether different from those hitherto employed.

It is time we forsook the traditional naturalism, since it is vague and void of that all-essential factor: value. Biology will avail us little in the fight against cancer if it cannot separate the grain from the chaff, the good from the evil in all that affects the interaction of life.

The *British Medical Journal* pointed out on November 18th, 1922: "Throughout the animal and vegetable kingdom we find incessant conflict of two forces, one endeavouring to preserve health, the other attempting to undermine it. In many plants the dispute is settled by the establishment of symbiosis, in which both forces combine to work for the common good. By reflecting on this conflict as it manifests itself throughout the natural world, and on the possibility of a happy compromise, we shall escape from too narrow an outlook on the question of health and disease."

The study in contrasts here implied has occupied my mind for a great number of years. The more I have probed the matter and studied the conflict and its alternative here alluded to, the more I have become convinced that what it discloses is just this: the eternal difference between right and wrong. It is not a mere petty compromise, not mere opportunitism, that will avail us, but our whole behaviour will have to be in line with those great co-operative principles upon which the evolution of life is based. Good biological behaviour is that which serves the good of all. Mere expediency is not good enough. For vainly do we aim at petty ends aside from the common good. Our acts inevitably arrange themselves, as Emerson has it, by irresistible magnetism in a line with the poles of the world.

Once we understand "behaviour" we shall also understand the *raison d'être* of the disloyalty exhibited by the cancer cell. It is a study in qualitative biology—a neglected subject. We should start our evolution theory with the axiom that every unit, or organism, has to justify its existence through service, *i.e.* that it has to be useful and valuable to the world of life. To be valuable is, as Ruskin said to avail towards life. "A truly valuable thing is that which leads to life with its whole strength. In proportion as it does not lead to life, or as its strength is broken, it is less valuable; in proportion as it leads away from life it is non-valuable or malignant."

And thus we are getting well on the track of malignancy and of evil. It is a fact that those who are the most useful are *ipso facto* the most restrained in their habits of life, whilst those who avail least towards life, the inferior and malignant, are the most unrestrained. *Rien ne se peuple comme les gueux.*

There is but one right, as Huxley said, and the possibilities of wrong are infinite. It is difficult to avoid the wrong way, as Goethe put it. This largely accounts for the fact that the number of organisms which are ever straying from the straight path is legion. But though evil abounds, we should not, therefore, confound it with the good. Nature does not recognise the adage *de minimis non curat lex.* She is too consistent for that. Rather it is a case of the mills of God grinding slowly but surely and grinding all, according to their merits and demerits and exempting none. If we still fail to understand the nature of cancer, this is precisely for the reason that we persistently underrate the consistency of Nature, as though all manner of loopholes were open to us to cheat her. And for the same reason we fail to understand the pathological character of both parasitism and its usual precursor, predacity, although even in their outer appearance parasites and predatory organism usually bear the stigmata of morbidity and disease. Most parasites are aesthetically repulsive in form, colour and movements. They are things of obscene and unlovely forms. Their ugliness is the brand of degeneracy. All evil organisms in course of time bear the brand of Cain, be it in their dull, muddy, blotchey colours, or in their uncouth or hideous shapes. Some of the angler fishes are villainously ugly. Many cuttle fish are odd and ugly. Some are hideous monsters, as are also most deep-sea fishes.

The principles animating good and bad organisms respectively are for ever incompatible. How could it be otherwise, seeing that the former stand for integration by service, whilst the latter stand for disintegration by disservice or rank malevolence? The relativity of good and evil need not trouble us here. The contrasts are so well marked that for practical purposes we need not feel shy in the use of these time-honoured epithets. Nor need we search the ends of the worlds for a clue to cancer. The morbidly pale appearance of the skin in cancer patients (connected with "cachexia," *i.e.* bad condition) who usually suffer from what has been termed "cancerous anaemia," is a tell tale phenomenon, occurring also amongst parasites.

Actually, through our flesh-eating and associated habits, we are in many ways worse off than the carnivora, which not only procure their food for themselves, but are also apt to get much more out of it than we do. Cancer is due, in blunt biological language, to the spread of a parasitic diathesis amongst us. That is to say we govern ourselves badly, and the food we love is conducive to "autonomy" and separatism amongst the parts, to dissolution, rather than to harmonious coherence and progressive synthesis. ("Diathesis," or pre-disposition, is a term again coming into vogue in medicine).

Nature, in other words, reacts to our uneconomic and disloyal habits of life by a curtailment of our existence. We should do well to conceive of the "struggle for existence" as a part of the endeavour of Nature to eliminate the wasteful, anti-social, anti-economic, anti-hygienic and malign elements, an endeavour which is marked in the germinal, domestic, and biological spheres quite as much as in the more purely physiological. All that is necessary, but no more, that is the principle on which Nature works—a principle that we constantly violate.

Look at the industrious and useful honey bee. It is not organised for aggression. The virgin workers will recognise the queen as a symbol of life more precious, more vast than their own. They will sacrifice their lives for the sake of hers. Yet, they will mercilessly massacre the clumsy, useless, pretentious, gluttonous and scandalously idle drones when the sources of honey begin to dry up at the end of the season. There is but little scope for those which violate the supreme law of existence, the law of service with the implied austerity of life. What would happen if the predaceous and indolent principle adopted by the drones were suffered to prevail in the race of bees? Disease worse than cancer—degeneration, in fact. (Actually some virulent bee diseases are believed to be attributable to the great susceptibility to infection on the part of the lazy drones).

It is necessary to understand that frequently degeneration is an alternative to some diseases. The principle of adaptation, which has never been probed very deeply, lends itself to so many uses that many all too pliant organisms, by embracing degeneration, may escape certain diseases. They shirk disease, in fact, just as they shirk other more auspicious contingencies of existence, which they are too indolent or too moribund to meet. They may subsequently re-combine their reduced forces at a lower level of existence. Ignobly to sacrifice patrimony rather than incur the responsibilities, risks and dangers of the progressive life, that is the characteristic of the weakling, the parasite. But though the parasite cheat acute disease, he has to endure worse disease, namely, gradual dismemberment with attendant degradation—a form of racial death. Such degeneration is a comparatively painless form of disease—the disease of the organism which would fain refrain from both: enduring pains and taking pains, albeit, in so attempting it only cheats itself.

That there are such possibilities and alternatives of disease, is worth remembering in the consideration of cancer, which exhibits a certain con-comitance of degeneration and disease, showing that, were our system compliant enough, and were such " adaptation " compatible with our high status as men, degeneration might to some extent become the alternative of disease amongst us too. Indeed, unless we make allowance for at least a limited application of this rule of alternatives even amongst races of men, any explanation of cancer will appear to be obscured and traversed by many contradictions, which yet, on deeper probing, are seen to be more apparent than real. Cancer is often unaccompanied by pain—a painlessness which, as the Memorandum on Cancer, issued by the Ministry of Health, states, is one of its most insidious dangers. The danger, I should say, consists largely in this that we have no warning of degeneration.

Our " ruined cousins," the degenerate Ascidians, may not suffer from cancer. But have they not suffered worse affliction as the result of their short cut, *i.e.* parasitic methods? Once upon a time they were vertebrates, but, as Sir E. Ray Lankester states, they have thrown away their tail and their eye and they have as the result of parasitism sunk into a quiescent state of inferiority. The Ascidian tadpole is very unlike its parent the Ascidian, and has to go through a process of degeneration in order to arrive at the adult structure. The vertebrate character of the Ascidians and the story of their degeneration would never have been suspected, had the Ascidian tadpole ceased to appear in the course of the Ascidian development at a geological period anterior to the present epoch. It is upon such accidents that the discovery of degeneration frequently depends. We shall not be wrong in assuming—a fact of which one who knows the respective stigmata, is well aware—that degeneration has a much more frequent occurrence in Nature than is commonly supposed. And we are entitled to conclude, further, that those organisms which have incurred degeneration (and which we have good reason to indict for their biologically evil habits), should not be held up to us as ideals of immunity from cancer, seeing that they are afflicted by the alternative of worse penalisation.

" Any group of animals, to which we may turn," says Sir E. Ray Lankester, " may possibly be the result of degeneration, and yet offer no evidence of that degeneration in its growth from the egg." We are far too prone to regard anything and everything as " normal " merely because it represents an " adaptation " and continues to propagate itself. The pioneers of evolution committed a grave error in taking mere survival as the criterion of evolutionary success. That initial mistake has retarded not a little the progress of biology as that of medicine. It is with such facile traditions in science as it is, according to Goethe, with many other forms of *damnosa hereditas*. "Es erben sich Gesetz und Rechte wie eine ewige Krankheit fort."

Cancer is but one of a long list of formidable diseases, the causation of which presents an absolute mystery to modern science. That there may easily be a common factor to all may be seen from the one fact that just as it is now recognised that the immediate cause of cancer is disloyalty on the part of certain cells, so the immediate cause of other diseases is seen to consist in the seizing of more than their fair share of the pabulum in circulation by some of the parts, *i.e.* by local predacity, which is also a form of disloyalty, of selfishness, of criminality. Should it not be a case of like master, like servant, *i.e.* organ or cell ? That is to say, the species, although it still survives, has become parasitic and to a corresponding degree degenerate ? Seeing that evolutional pathology is hopelessly backward, no one could contradict this proposition, which is on many counts the most plausible to adopt. It is plausible in common sense, and it is also in accordance with the facts of Nature. Like the thief, the predatory organism steals from itself. "The league between virtue and Nature," as Emerson says, "engages all things to assume a hostile front to vice" . . . "The retribution is in the thing" . . . "It is inseparable from the thing, but is often spread over a long time and so does not become distinct until after many years." . . . "Punishment is a fruit that unsuspected, ripens within the flower of the pleasure, which concealed it. Conversely, an organism branded by stigmata of degeneration, must have been guilty of transgressions against biological, or more exactly, bio-social law. What a new reading of evolution and disease will be possible in the light of the principles of compensation and adaptation brought up to date !

We should never be satisfied with a mere "adaptation" view in biology. We should ask for an account of the compensations attending every adaptation. I have written more than one indictment of modern biology, and recently an orthodox writer in *Nature* has admitted biology to be in an "unhealthy state." How could biology possibly be in a good condition, seeing that it fondly believes itself to be "beyond good and evil" ? Are biologists too proud or too fearful of a loss of prestige to make a concession to the "all too human" ? Can they afford to dwell for ever remote and "austere" in a world of their own ? Rome is burning—the scourge of cancer is progressing with menacing strides—and we have not even a conception of the origin of disease, *i.e.* of that which is evil in a biological, physiological and human sense. I have never tired in emphasising that values could not be dispensed with in biology, and, further, that, although "absolute values" may not be the concern of the biologist, yet evolutionary progress must be interpreted in terms of value to the plan and its efficacy in terms of conformity with the dominant—the bio-moral—idea behind it. The biologically good, being in accordance with plan, succeeds, whilst the biologically bad is destined to degeneration and ultimate extinction.

Biologists are handicapped, not only by faulty traditions, but also by their *a priori* difficulties—a predicament which was recently discussed by Canon O. C. Quick in the *Hibbert Journal*, October 23rd. He rightly declares that an attitude strictly detached from all moral and aesthetic presuppositions, an attitude purely receptive towards things good and evil alike, is bound by its very nature to lead to a very partial, not a comprehensive view of things. He states that however strictly scientific the scientific man may be, he will probably recognise that unless some mind is going to pass some ultimate value—judgment on the material he produces, his labours will have been thrown away. "The pathologist who studies the bacteria of disease, treats them not as evil, but as the subject-matter of research. Yet he is quite aware that if disease were not an evil, his enquiry would never have been undertaken." The Canon might have added that but for the existence of some antecedent evil providing the temptation the pathogenic bacteria would not even have been evolved. Although it may be, says Canon Quick, that the ultimate goodness of the universe can only be appreciated by minds which have exercised rigorous self-denial of enquiry into the world as though it were neither good nor evil, yet both man of science and layman, will agree that the layman's judgment is the judgment which is ultimately right. The pathologist, *qua* specialist, may be entitled temporarily to disregard the very rightness of the layman's judgment lest his moral interest should get the better of his scientific curiosity. But the limitation of the specialist, however expedient it may be, should in no way hinder us from preferring for all practical purposes of life the panoramic view of things, to which the specialist more often than not remains blind. Biologists have not even attempted to classify things according to good and evil; and some even think they may belittle one who does. But we need only glance at the good practical results arising from such classification to see that the days of the pretentious "valueless" biology are numbered. If it can be shown, for instance, that predacity inevitably results in infection, disease, degeneration, inferiority, then it is clear that in Nature, too, the law of moral consequences holds good, and, what is more, strong presumption is afforded for the view that the prevalence of disease amongst us is due to that (officially) unrecognised factor: evil. Let our research-workers on cancer commence with the study of evil in our midst. Plain language and common sense alone will make many niceties of research, much solemn trifling, superfluous, and they will allow the attention to be riveted on the main issues. Let our biologists contribute their story of the origin of evil, of criminality and of disloyalty in Nature, so as to show what modes of life we do best to avoid, or even to suppress.

Consider what can be done along those lines. The Hymenoptera, which in their colonies in many ways closely resemble the states of man, offer some good illustrations. There are the apparently flourishing relatives of the bees, the wasps, the highwaymen amongst Hymenoptera. To orthodox biology it is "inconceivable" that the wasps should be in any way abnormal. Let us see. The orthodox biologist will tell us that of the three groups which stand at the head of the hymenopterous order: the ants, bees and wasps, it is difficult to say which is the most highly developed. He will admit that the divergence of these three groups is based on the nature of their food, but he is unable to make adequate qualitative distinctions in accordance therewith. Here, as in the matter of the agreement between the three groups, he is too much of a naturalist, or specialist, and not enough of a qualitative biologist, to draw such conclusions from his own findings, as would be of practical consequence in the conduct of life and in the understanding of disease. Yet the case is pregnant in such lessons. Firstly, what are the points of agreement between the three groups? All are taking immense pains in securing the welfare of their young. Indeed this feature is said to be common to the whole order, for even the less highly developed Hymenoptera take much more precaution for the safety of their offspring than insects of any other order. Few will doubt that progressive paternal care and progressive evolution go together. But it is more or less, the difference in quality, in the care, which first of all differentiates the order into groups, and this difference depends largely on the general biological behaviour, the feeding habits of the group, as I pointed out elsewhere. Great discrimination, therefore, is necessary in accepting the idea of a common feature such as parental care between different groups. The factor should be handled much in the same way as "adaptation," *i.e.* with an eye to compensation, to results. On due consideration of the differences existing between the three groups, one is impressed by the great inferiority of those characterised by the lesser parental sacrifice, as by the coarser feeding habits which render progressive sacrifice impossible. To the bees flower pollen is the only nitrogenous food, whilst the wasps appropriate largely animal matter instead.

What are the resulting divergences in the general circumstances of life, in viability and evolution? We find that the bees are specially equipped for service—not only for usefulness in their own immediate interest, but also in the wider interest of the plant and animal world generally. They are of wide and general avail of life, than which there is no more auspicious factor of continuous survival, than which there is no better way of avoiding fatal "over-specialisation." The bees are equipped for collecting and conveying pollen, and, hence, their anatomy and physiology differ from those of the wasps, which are not so adapted. The bees may be said to have gone with the spirit of the time, which is one of service in co-evolution. The wasps, on the contrary, adopted short cut methods, those of glittering militarism, which is the bane of every race that adopts it.

Let us contrast the compensations of each case in detail. When it comes to advantages for merely expedient purposes, the wasps may be said to be superior. Their mandibles, or biting jaws, are more prominent and stronger than those of the bees. But the moment we take the long view, this is seen to be a disadvantage; for the strength of jaw was purchased at the expense of brain develpoment. In a general way, throughout the whole animal kingdom the development of the mouth and the anatomical structures connected with it depends upon food and the methods of taking it. In general it is not the maintenance or enlargement, but rather the recession of the snout region which is the secret of progressive evolution amongst animals, as was shown at some length in my book on "Symbiosis." The great development of the mouth parts generally goes hand in hand with the progress of the animal in an insidious disease ending in monstrosity and extinction. That we are generally unable to diagnose the early symptoms of disease, does not alter the fact that species have their own diseases, such as acromegaly, for instance. The inferiority of the wasps may be gleaned from other compensations. Contrary to the bees, the colonies of the wasps are annual only—such curtailed social life being all they can afford. For, like the cancer cells, the wasps are improvident. They do not store food, as do the bees, as do the normal cells of our body. Nor would the animal matter which they habitually consume, be appropriate for protracted storage. Hence the wasps are unable to provide for their young as adequately as the bees. Unless the weather is consistently fine, many incipient wasp colonies must perish because of the inability of the mother to secure supplies. The life of the wasps is, therefore, precarious and much more at the mercy of circumstances than that of the bees. Says Mr. H. Mace: "A few days' bad weather in summer can be tided over in the beehive owing to the reserve supplies it contains, but even one day which is hopeless for foraging, causes much mischief in the vespiary, a week of rainy weather in July or August will reduce a wasp colony to the verge of starvation. At the best, it prevents the development of the nest and causes a swift decline in population. For this reason, wasps are never abundant in changeable or wet seasons, but in a long fine summer they thrive amazingly. When sharp weather arrives, the workers left in the nest set about a singular task, dragging out the remaining larvae from their cells, and killing them, as though to spare them the agony of slow starvation, after which they also fall victims to the cold nights of autumn."

Evidently, then, on the long view, food either makes or mars the organism, according to its biological adequacy. Unconsciously food promotes this or that organisation, according to its source, according to the way in which it is earned. To be able to appreciate the cumulative effects of food is to understand one half of evolution.

Although only partly carnivorous, the wasps are obliged, as the result of their inferior feeding habits, to suffer a greater intensity of death in their ranks than the bees. Accident plays a greater part amongst them than amongst the bees. In social character they are far inferior to the bees, and hence,—so close is the dependence of physiological upon sociological factors—the evolution of the wasps could not have been anything but inferior in character. Darwin suggested that liability to extinction may be due to lack of improvement according to the principle of the all-important relations of organisms in the struggle for life. Such lack of improvement, it now emerges, is due to a lack of co-operative disposition, to a lack of social character, *i.e.* the respective species are incapacitated from physiological progress, because their bio-social activities are too inadequate to obtain the wherewithal for successful elaborations on the part of the organs. The story goes of a rich man, having sent up nothing but mud, could not obtain a very comfortable dwelling on arrival in heaven. In some such way, a species which behaves badly in a bio-social sense, cannot hope to have its progeny well secured thereafter, but the progeny will, on the contrary, be increasingly liable to disease, to infection and to extinction. With a highly developed social character there usually goes a high form of internal, or physiological, harmony. To-day we regard the organs as semi-independent organisms. As such they participate in all developments of specific character according to the principle : like master, like servant. If the organism lose its co-operative character, the organs will lose their previous disposition for mutuality and control, too. If the organs fail to co-operate, if any are prone, in the words of Sir Arthur Keith, " to seize more than a fair share of the manna in circulation," or to have " sticky fingers," and " seize what is not really intended for local consumption," then disease and inferiority inevitably ensue. And the same must happen if, say, the sympathetic nerve system overacts at the expense of the parasympathetic system, or *vice versa*. Once the cells of our body, having caught our bad habits, begin to live cannibalistically on their own account, there is trouble, and the ensuing malignancy may become so great as to give rise to cancer.

PSYCHICAL AND PHYSICAL STRUCTURES.

BY PROFESSOR K. KOFFKA (GIESSEN).

(In our last issue an account was given of Professor Koffka's paper on Psychical Structures read before the Cambridge psychologists, and in an article by Dr. Allport the general position of those who support the " structural " view was further elaborated. Professor Koffka, whose work on " The Growth of the Mind "will shortly appear in an English translation, here discusses the bearing of the theory on Realism. —Ed.)

In the last issue of *Psyche* I find two contributions of special interest to myself, viz., the Editorial and Dr. G. W. Allport's paper on " Gestalt "-Psychology. It was a new and decidedly pleasant experience to read these sympathetic presentations of views, so far mainly developed in a small circle of co-workers, coming, so to speak, from the outer world. Will you allow me to add a few remarks, meant not so much to supplement the picture sketched to your readers, as to give it sharper contours, deeper lines of demarcation and articulation.

The main thing I wish to stress is the *realism* of our standpoint. This realism is not meant to be speculative merely, up in the clouds and theoretically loose. On the contrary, it endeavours to build on well grounded facts, keep close to experimental evidence, even much more so than the older views which it combats and which seem to us fraught with hypotheses not based on observation.

Structural (" Gestalt—") laws which we try to formulate must be precise, structural forces which we try to demonstrate are concrete realities, discoverable only by an experimental method that implies quantitative as well as qualitative investigations. The procedure is speculative in so far only as all science is: it thinks out the questions to be put to nature. It is technical in the attempt to answer these questions. Gestalt-Psychology has so far got a number of important answers to its questions and has been inexhaustible in suggesting new ones, making us see problems where other theories believed to have ready solutions.

What then does our realism mean ? We may show two of its aspects, reflected from its conception of the intrinsic and extrinsic relation between mind and nature. Intrinsically it considers mind, or rather mental processes, not as something outside of nature but as just such natural events as any other. They are links in the chains of reactions produced by an organism in an environment, and cannot legitimately be isolated from this context. Consequently the science of mental processes cannot cut itself off from the other biological sciences, most particularly must it keep in close contact with physiology, as the total reaction of the organism of which mental processes are parts is surely a physiological event. I shall not attempt to discuss in this place the old problem of body and mind; a solution somewhat like that of Prof. Lloyd Morgan's "emergence" seems to point in the right direction. Only one inference from such a way of thinking must be emphasized: if "mentality" or "awareness" be a quality attaching to special physiological processes, then surely the quality of such awareness cannot be merely contingent on these processes but must share their essential properties. This means methodically that we can pass backwards and forwards from the one to the other, ascribe certain characteristics to physiological processes which we have observed in the mental ones and *vice versa*. The chief property common to both physiological and mental processes stressed by Gestalt-Theory that derives its name from it, is their "*whole-character*"—I prefer to avoid the term "integrative," because this may, though not necessarily, imply that integration is a process accruing to the original, not integrated, phenomena. A percept is not a sum of independent elements, nor a mental combination of such, but primarily a *unitary structure*. Psychological analysis, far from revealing the constituents of the whole, breaks it up, destroys it, puts in its place something else, transforms one process into others. Similarly the physiological processes are not a lot of single events insulated from each other; rather are they processes in one and the same physical system, and consequently no part process is entirely independent of any other part process.

Again, both mental and physiological processes are vectorial, possessing their starting point, their direction and their end.

In life there is a continuous stream of such processes, yet it is quite possible to distinguish relatively complete part processes: the writing of this sentence, playing a tune on the piano, looking at a picture, are instances of such. It is such relatively closed events which in the first place we term unitary structures (*Gestalten*), but inasmuch as there are generally no absolute breaks between them, as in a normal person there exists a sort of all-pervading continuity, it is only natural that also larger and larger sections are considered as unitary structures, that in the end personality itself falls under this concept. Therefore I cannot quite admit that the limits of our concept are ill-defined. The limitation of its application cannot be logically predicted, they must be experimentally detected.

We are now prepared to approach the problem of Meaning in its subjective aspect. Psychophysical processes—let us use this word to denote the double, mental and physiological, character of the events discussed—being unitary structures, their parts, simultaneous and successive, are not chained together by external bonds which might as well join any other constituents. Rather, in a good structure each part can only be such as it is, being fully determined by the whole whose part it is. Therefore a structured process being started, its progress is, more or less, determined as the " continuation " of the initial stage, a certain ambiguity being possible in so far only as the beginning may have several " good " continuations; provided the process is allowed to run its course without interference. Just the same in a static structure, remaining constant for some time, if it is of a high type, all its parts will be interdependent and that in such a way that from one centre, the nucleus of the whole, each of them issues as its natural outgrowth. Such structures may develop in the perception of an organic form or of a masterpiece of art, it may develop to a higher degree even in our concepts. The necessity binding the parts of such structures together is not an external force but is inherent in the whole, is *meaningful*; not habit forces us to go from one part to the other, but each is claimed in its particular position by the whole. In so far a structure does possess meaning subjectively, meaning which need not be derived from experience. It would be folly to deny the tremendous importance of experience for mental development, but about this question two points must be marked: (1) that experience does not create meaning (though it may do so in special cases); (2) that experience itself is not the blind agent of traditional psychology but involves structured processes.

Yet I should not call meaning a priori, because it is an empirical and a natural fact. For we must not forget that we are all the time considering natural processes. Calling these meanings subjective does therefore not signify that they are not real; they are just as real as any other properties of nature, and subjective in so far only as they belong to reactions of individual subjects. The term " subjective," however, has still another implication, referring to the relation between the perceptual or conceptual, reaction and the situation perceived or conceived, the relation of truth. Our reactions may be right or wrong. This leads us over to the *extrinsic* relation between mind and nature. From what we know about the intrinsic one we can deduce that the extrinsic one is not one of point-to-point-co-ordination and that we cannot analyse a perceptive process occurring in a certain situation into single elements, sensations, each corresponding to an elementary situation part (single stimulus). The whole of the situation, so far as it affects the sense-organs, sets the conditions for the entire reaction, though not every part of the situation acts in the same way. Here the fundamental distinction between figure and ground comes in on which Dr. Allport has rightly laid so much stress. Quite generally : addition of an element to a stimulus situation does not add an element to the psychophysical situation, but either transforms it into a new psychophysical situation or leaves it practically unaltered. Again it depends upon *how* you add the new stimulus, whether or not conformable with the existing pattern.

The total structured reaction, then, is the primary fact. In this fundamental point we thoroughly depart from the doctrines of v. Ehrenfels and Meinong who, however clearly they may have recognised the phenomenal reality of a " Gestaltqualität," always started with the elements, the " fundaments " and considered the Gestaltqualität as a purely mental superstructure. For them the sensations were prior to the Gestaltqualität, an assertion that is absolutely meaningless from the point of view of Gestalt-theory, that knows only a total reaction with the character of a unitary structure. It is, therefore, not quite correct to speak of something new supervening to the stimulus effect, such expressions are liable to be given an interpretation that obliterates the differences of principle underlying the new and the older teachings.

In addition to this side of the extrinsic relation between mind and nature, there exists the cognitive one. I apprehend nature in my percepts (and concepts). Let the reader mark the way in which I used the word " apprehension," to denote a relation between mind and nature, not one between mental processes themselves—which latter is the custom of psychologists, when they speak of apprehended and non-apprehended sensations. As I use the word it signifies nothing but a definite relation between two natural events. The problem of apprehension therefore is this : What are the psychophysical processes in my nervous system like, when I am said to apprehend any natural event ?

Knowing something of the intrinsic nature of these processes we may ask : May not their chief property make them most unfit for cognitive purposes ? Surely it often does so, as, for instance, in all optical illusions ; the length of a real line does not change if we attach arrow-heads to it, yet the length of the perceived line does. To generalize from such cases corresponds to a deep-rooted tendency of modern thought—yet it would be utterly wrong. It would mean that of all natural events only those in nervous systems are unitary structures and no others. But such a position is on the face of it most improbable. Once we grant structural properties to any " purely " natural events, such as physiological processes, there is no reason to deny them to all others. It is the great merit of Prof. Köhler's book on physical structures to have finally overthrown this position. All through nature, in the realm of pure physics as elsewhere, we find these structures as the normal type of process. What we said about the psychophysical processes holds, then, also for purely physical ones. The connection between the whole and the parts into which we may divide it is not contingent, accidental, but again each part is determined by the whole. In so far " purely " natural events are meaningful, a certain beginning claiming a definite continuation and that a definite end. This might be called objective meaning, but again it is not *a priori* in the ordinary sense of the word.

Let us revert to our cognitive problem. We know now that both psychophysical and purely physical processes may be structural. Yet, in a concrete case, can there exist any connection between the structures outside and inside the organism ? The only relation between them that seems possible is that the physical structure evokes a mental one, the specific properties of each of them being quite different. This impression corresponds to part of the truth. Primitive mind finds structured units that do not exist, it knows nought of many that do. All magic, the " participation " which Lévy-Bruhl has treated with so much emphasis, are just such subjective structures which have no counterpart in outside nature. And yet primitive mentality is not so futile as it may seem at a first glance. It is dominated by unitary structures and out of such unitary structures our concepts can be developed through transformation. But what would our mentality be like, if the primitive mind were but a bundle of isolated ideas ! This process of transformation, to which we referred just now, will gradually, if we are right, assimilate the subjective structures to the objective ones ; gradually, but by leaps and bounds, each new discovery, each new and fertile theoretical opinion being such a leap or bound in an individual system, to be spread, to be imported to other systems by means of language. To understand the progress of knowledge in this way, as an approximation of subjective to objective processes one must consider that the subjects belong as comparatively complete part-systems to the whole system of Nature, that in this large system they have developed.

At last a word on personality. As Dr. Allport emphasises, that too is a unitary structure in our sense, and long since Prof. Wertheimer, in his lectures, has treated personality as a Gestalt. Dr. Allport also justly mentions that a group of German psychologists and philosophers—he names Prof. Spranger, one of their leaders—advocating a "geisteswissenschaftliche" psychology endeavour to treat personality from a stand-point somewhat similar. Yet the differences between their principles and those of the Gestalt-theory must not be overlooked. As the name implies, these authors separate mind and body. They conceive personality as a purely mental, spiritual fact, cutting natural and spiritual man sharply asunder. This distinction is of course not valid for us. For us personality, too, is a natural phenomenon, and we do not think that we are detracting the slightest bit from its worth by assigning to it its place in Nature which, rightly viewed, is not the stupid meaningless heap of whirling atoms but a universe of evolving and decaying structures.

FOREIGN INTELLIGENCE

PSYCHOLOGY IN THE U.S.A.

Meetings.

The Boston Group of Psychologists met at Emerson Hall, Harvard University on March 15th, at which session the subject of *Gestalt* was discussed in its relation to the older psychology. The composite sentiment of the group seemed to be that while the new movement offered important contributions to psychology, it could not be considered as the sum-total of the science, nor is it in a position ever to transplant the old system in spite of the many significant criticisms that the *Gestalt* psychology has raised.

The group of Eastern experimentalists who gather annually for the purpose of reporting the problems studied in their respective laboratories held their meeting in Clark University cn April 3rd, 4th, and 5th. The following laboratories were represented: Cornell, Columbia, Harvard, Princetown, Wesleyan (Middletown), Clark, Pennsylvania, Smith, Wellesley, and Mount Holyoke. some of the investigations have already been mentioned in previous reports for *Psyche,* while others are reported below under the heading of laboratories.

LABORATORIES.

Columbia.—At Columbia University the following investigations are in progress:

(1) Re-action Time ;—facilitation and inhibition.
(2) A study of the growth of Concepts.
(3) A group Test for Suggestibility in Children.
(4) The Effect of Praise and Reproof in retests.
(5) Correlation of various anthropometric indices with academic success.
(6) Speed and Accuracy in the Dotting Test with and without Distraction.
(7) Comparison of controlled asso. times for different parts of the list.
(8) Improvement in intestinal toxemia (as measured by psychological tests) by a course of treatment.
(9) Fatigue and its Effects as measured by loss of visual acuity, different rest intervals, etc.; fatigue curves for arm, leg, body, and for mental work.

Wellesley.—A number of interesting problems are being investigated at Wellesley College. Prof. Christian A. Ruckmick who has directed these investigations and who, by the way, is leaving Wellesley College to accept a professorship at the University of Iowa, has communicated the following account:

Vision.—By means of the Meyrowitz perimeter we are working out the distinctions made between the form of peripherally aroused objects and their color. There appear to be transitional stages between the formless patch and the square and the point of stimulation of these stages vary with the primary colors.

The Hering binocular contrast effect appears to be reversed when the background is changed from white to black. We are also working through the intermediate grays in the background.

Audition.—In a paper about to be published we have shown that the pointing method in localization is slightly more accurate than the method of visualization of points. It does not tend so readily toward automatization and can be subsequently checked objectively. Again in the course of this work we have found that a click is often differently localized than a continuous pure tone.

Imagery.—By careful analysis of continued free association we are getting at individual variation in ideational type.

Affection.—By comparing results obtained with the method of paired comparisons when rapidly done with the same procedure executed with plenty of time, we find no more change in rank than occurs with ordinary repetition. The assumption is that the meanings which were to be excluded by the quick method are already attached to the perception of the colors. We, therefore, get affective reactions to perceived colors. not to sensed colors.

Emotion.—In the interpretation of facial expression of emotion we are analyzing the attitude of observers toward pictured emotion and also the part played by forehead, eyes, nose, and mouth. The eyes seem most important indicators so far.

Mood.—On the assumption that slow music gives different moody effects than fast music, we have slowed down dances, hunting songs, and martial marches of unknown character and have hastened funeral marches, arias, and andante passages of all sorts. There is a traceable effect. We are now going on with various tempos of metronome rings.

Diagnostic Association.—We are carefully repeating the method of detecting concealed experience to evaluate the relative importance of the type of reaction word and the reaction time.

Learning.—There are a number of experiments in progress to test out the statement of Seashore regarding the native character of pitch discrimination, tonial memory, and rhythm. So far there has been little, if any, improvement in response to repetition of the standard Seashore tests and tests of our own devising.

Rhythm.—Tactual rhythm, not heretofore investigated in its pure form, shows the same nature as kinaesthetic and auditory rhythm. Kinaesthesis tends to be eliminated with time and the pure tactual sequences remain.

Lip Reading.—What makes some individuals naturally better lip readers seems to be answered by the fact that visual imagery of the movements is required and that the natural tendency to attend to an individual's eyes must be inhibited in favour of the lips.

Guessing.—Ability to tell when coins fall "heads" or "tails" still appears to follow the probability curve even when the operator "wills" with knowledge of the situation. A striking case of 19 correct judgments out of 20 appeared. With 50 judgments the probability result was restored.

Wesleyan.—At the Wesleyan College Laboratory, work is carried on on the conditioned reflex and an improved technique is being devised for measuring respiratory reactions.

Pennsylvania.—Psychometric functions are being investigated at Pennsylvania University, where experiments are carried on to determine the limen of higher pitch, and on pressure along the line of the stimulus error. Of a different nature is the problem reported by Prof. Fernberger, of the constancy of judgment with the Piderit model of facial expression.

Princeton.—By the time this statement is printed the Princeton Psychological Laboratory will be completed and ready for occupancy. It is a three-story building with a basement, and includes in addition to the research rooms, lecture rooms, sound proof chambers, dark rooms, a vivarium, editorial offices, a long corridor that may be used in special cases for experimentation, a library, skylight room, a dumb waiter for carrying apparatus, and many other conveniences which will make the laboratory the finest of its kind in the United States and certainly one of the best appointed psychological laboratories in the world. Prof. Warren has done all the planning for this new accretion to Princeton University, to which Mr. Eno has contributed $100,000. Professor H. S. Langfeld, who is leaving Harvard, will take charge of this new laboratory.

Publications.

There is a possibility that the American Psychological Association will take over all the publications of the Psychological Review Co. of which Prof. Warren is President. In that event, the Association may launch a journal for abstracts at which a regular staff will be employed.

Prof. W. V. D. Bingham of the Carnegie Institute of Technology has been appointed editor of Dr. Thurstone assistant editor, of *The Journal of Personal Research.*

Among the most recent books in psychology may be mentioned: *The Unstable Child* by Florence Mateer (Appleton), *Elements of Educational Psychology*, by L. A. Averill (Houghton Mifflin), *Mobilizing the Mid-Brain* by F. Pierce (E. P. Dutton), *Personality and Psychology* by J. W. Buckam (Doran), and *Psychology in Theory and Application* by H. Dresser (Crowell).

Harvard.—The following doctoral dissertations have been submitted this year in the department of psychology, Harvard University:

Rhythm as an Isolated Factor in Music, by Miss R. Murphy.

The Relation of Quality and Speed in Mental Work, by Miss M. V. Kennedy.

The Configurational Theory of Perception, by Mr. H. H. Helson.

The Selective Effect of Chromatic Minuthesis, by Mr. S. C. Langford.

Psychology and the Criminal Responsibility of the Insane, by Mr. S. S. Glueck.

Instinct Considered from the Point of View of Educational Psychology, by Mr. L. Carmichael.

Clark.—It is gratifying to note that the decision to discontinue the granting of Ph. D. degrees at Clark University has been reconsidered, and though the psychological department has been considerably reduced, a sufficient staff will be employed for the giving of advanced instruction to graduate students.

Prof. W. Koehler, the successor of Carl Stumpf at Berlin University and author of a volume on *The Mentality of Apes* of which a translation is to appear this summer in the International Library of Psychology published by Messrs. Kegan Paul, in England, and Messrs. Harcourt Brace, in America, has accepted the invitation from Clark University to act as visiting professor there for next year. During the summer of 1925 he will give a course in the summer school at the University of California.

Obituary.

The death of G. Stanley Hall, president emeritus of Clark University is a severe loss not only to American psychology, but deprives the intellectual world of a leader in educational thought. In addition to the gigantic task of organizing Clark University and conducting it along dangerously experimental lines, in which course his experiment yielded fruitful results, the late Dr. Hall found time to teach, to found several psychological journals—the first on this continent—and to write voluminous works. Though it cannot be said that the late President Hall died prematurely, for he had lived his three score years and ten, even before he had retired from active life, the extent of his literary production was such that at least a few more volumes could have been expected from his pen. The American Psychological Association loses in him its first president as well as its last (in the sense of latest) which is symbolic of the rôle he played in American psychology.

A. A. Roback.

ITALY.

The Fifth International Philosophical Congress in Naples.

(May 5th—9th, 1924).

The Fifth International Philosophical Congress, which took place in Naples from the 5th to the 9th of May, was of course not as " international " as it ought to have been, or even as the four analogous congresses before the war. It is a great pity that England had only two representatives—Mr. Tudor Jones from Bristol and Mr. Thomas Greenwood from London—and that America was absolutely unrepresented. Even France had only a few delegates in Naples, so that of the great European nations only Germany and Italy had really numerous delegates in all the ten sections into which the Congress was divided.

On the other side almost all the smaller nations were represented at the Congress. There were of course not only Swiss, Dutch, Scandinavian, Spanish, Belgian, Polish, Prussian, Austrian, Hungarian, etc., but even Indian (Prof. Dasgupta of the Chittagong College—Bengal) and Negro delegates. Perhaps not one of the preceding congresses had the participation of as many nations as this one. So that from this point of view—especially if one remembers that it was the first international philosophical congress since the war—the congress in Naples was very successful and particularly interesting.

As regards the various sections, much time and attention was dedicated to the commemoration of Thomas of Aquino, whose 650th year since his death (1274) falls in this year, and of Kant, who was born in 1724. But for the psychologist even more interesting was the commemoration of Maine de Biran (died 1824). Maurice Blondel—who was absent, but whose discourse was read by Prof. Brunschvich of the University of Paris—and Isaac Benrubi, of the University of Geneva, justly insisted upon the great importance of Maine de Biran for modern psychology. His anti-intellectualism, and the stress laid in his philosophy on the " données immédiates de la conscience " make him anticipate certain currents of modern psychology, especially " Bergsonism " On the other hand Benrubi showed that Maine de Biran himself came under the influence of the psychology of J. J. Rousseau.

It is curious that of all the ten sections of the Congress, the most animated from beginning to end was that devoted to Psychology. The Italian element here predominated. And as in Italy psychology is more intimately connected with psychiatry than in any other land, and has for this reason a strictly empirical and experimental character, the papers on experimental psychology were particularly numerous. The impression produced was that in Italy the strictly experimental form of psychology for some time will prevail. And there is no doubt that the Italian experimentalists are among the most patient and accurate of to-day. Particularly interesting were the experiments by Agostino Gemelli, an ex-pupil of Kuelpe and of the " Wuerzburg School," whose methods he is trying to apply and to improve. In any case his new experiments show that in all the higher mental processes imagery is of very little importance and often absolutely negligible. On the other hand great significance attaches to other psychic processes, which it is very difficult to specify or describe, but which certainly exist and are certainly not images. These results agreed in many points with those reached by the author of these lines, who insisted in his own paper on the special importance of the specific " re-actions " which accompany each word and each concept, and which constitute the real psychological sense of the words and concepts, whilst the representative (visual, acoustical, motorical, etc.) elements have only the value of occasional illustrations. Both papers were opposed by adherents of the intellectualist and associationist psychology, so that almost all the sittings of the psychological section tended to revolve round this important controversy.

Another interesting discussion was originated by a discourse of Prof. Kiesow of the University of Turin, on the " eidetic " phenomena of memory, *i.e.*, on the mnemonic images which have the vividness of a hallucination, only with this difference, that the subject is well aware that he is dealing with mnemonic images and not with reality. Some of the psychologists and psychiatrists who took part in the discussion were of the opinion that the " eidetic memory " must be considered as the more primitive form of our memory, which in the subsequent course of evolution gets more and more schematic, with the persistence of only the most important and most characteristic elements of the remembered fact. This view seemed to be supported by the circumstance that the " eidetic " phenomena are particularly frequent in children and abnormal subjects, whilst they are extremely infrequent in adult and normal persons. It is, however, clear that the material at present available is not yet sufficient for any solution of the problem or for the establishing of any hypothesis about its true nature.

Many Italian alienists also made valuable contributions to the problem of the dissociation of personality, and of the origin of neuroses. The Freudian tendencies in psychiatry are certainly getting more attention in Italy than before.

As regards the non-Italian psychologists particularly interesting were the papers on Aesthetics by Mueller-Freienfels, who expounded briefly his well known theories on the " aesthetic pleasure," and connected them with his views on the psychology of reasoning and on " irrationalist metaphysics."

In other sections there was interesting material for racial psychology in the paper by Prof. Luigi Valli (Rome) who related the tendency of the Aryan race to abstract speculation and philosophy (particularly intense in Greeks and Indians) with the custom of burning the dead. Whilst other races—the mediterranean, the semitic, and the mongolian—try to conserve the body to render it eternal, the Aryans see the eternity in the disembodied soul and burn the body. Where both customs exist side by side, we may suppose the intermixture of races and their cultures.

One other feature of the Naples Congress had a significance for psychology. For the first time in an international philosophical congress one heard remarks such as: " Reasoning is useless," " Science is impotent "—" Only mystical ecstasy, the union of the individual with the eternal and the absolute, is *the* truth ! " This neo-mysticism seems to be very popular in all countries, and the international congress, like a good barometer, revealed the power of this new tendency in the spiritual life of to-day.

This mystic tendency encountered resolute opposition not, as might have been anticipated, from scientific philosophy—but from catholic dogmatic philosophy, which contrasted with the heretical mysticism a faith in the orthodox Thomism. But perhaps it was the fact that Thomas of Aquino's death was being commemorated which gave to the catholic tendency an importance in the congress, which it cannot claim in the real life of Europe. Nevertheless, the impression prevailed that a renaissance of Catholicism is really occurring in many countries, and that the dogmatism of the Church has as much attraction for some as mysticism has for others.

G. STEPANOW.

CURRENT LITERATURE

Elephants and Ethnologists. By PROF. G. ELLIOT SMITH, F.R.S. Woodcuts by A. H. GERRARD and K. LEIGH-PEMBERTON. (Kegan Paul, 15/-).

To each science its crucial antinomy, its irreconcilable antithesis. For anthropology, the ancient controversy between polygenists and monogenists, announced by partisans of either dogma in alternation, as definitely laid to rest, has been reopened again of late. For ethnology, or rather for that branch of ethnology that is mostly concerned with cultural and psychological problems, a not dissimilar problem has recently become once more a matter of moment and of polemic. Only a few years ago it was stated, with shew of authority, that necessity had been shewn for abandoning the theory that cultural similarities justify the assumption of remote relationship between races. It was declared that the development of the pyramid-tomb idea, by Aztecs and by Egyptians alike, was independent of all ethnical relationship, and an outcome of " that psychological similarity " that is as characteristic of the species *Homo* as is physical similarity. Prof. Elliot Smith has declared roundly that such a statement is sophistry, and has summarised, in the later volumes of the present edition of the *Encyclopaedia Britannica*, the conclusions to which he believes that " real scientific method " leads us. Roughly speaking, these are that similarities in culture are not the outcome of independent cultural evolution, and that " civilisation " originated in Egypt, thence becoming diffused to the four quarters of the world. Thus does he explain the cultural similarities that are found to exist between races that are separated in geography, and not related ethnologically. In accordance with this notion, he holds that the pre-Columbian civilisation of Central America, Mexico, and Peru was not wholly due to independent (indigenous) invention, but was inspired mainly by immigrants who at various times crossed the Pacific Ocean from Asia. On the other hand, there are those who uphold the ethnological Monroe doctrine: who declare that the pre-Columbian culture in question owed nothing to the Old World. Now, since the assumption of " psychological similarity " has been invoked as explanatory by the one camp, and has been scorned by the other, a very pretty quarrel has come about that is of intense interest to all comparative psychologists. And, just as the controversy between Biblicals and Darwinians some thirty years ago degenerated into a dispute between Huxley and Gladstone as to the civic status of the Gardarene swine, so does this present battle rage chiefly around the interpretation of certain carvings on a column, known as Stela B, at Copan, in Honduras. This stela is a monument of the pre-Columbian Mayan civilisation. Two of the carvings thereon are declared by Elliot Smith to represent elephants' heads, with mahouts, turbans and goads, complete. By his opponents they are declared to represent macaws, tapirs, tortoises, extinct mammoths or what not ; but, never elephants. It seems to be assumed that, if Elliot Smith is right, the case for Cambodian influence in Honduras is proven. And, Elliot Smith speaks of repression of inconvenient evidence on the part of those who disagree with him, and compares their methods to those adopted in the leading case of the Church *v.* Galileo.

Those who wish to form a competent opinion on the minor issue and its relations must read this really beautiful work which, in itself, is a document of great value. But some comments may be offered. Some of the opinions advanced by those with whom Elliot Smith is in disagreement are clearly fantastic or strained. On the other hand, Elliot Smith does not perhaps state as plainly as he might that Maudslay's casts in the British Museum shew, without any doubt, that carvings which cannot be mistaken for anything but heads of macaws were made in abundance by the Mayan sculptors. But now : what of the carvings that form Elliot Smith's *pièces de resistance ?* That they do present similarities to the heads of elephants, and possibly to turbaned mahouts, should be conceded. Yet both parties seem to be guilty of an *ignoratio elenchi,* even though it be only a very little one. The real question is not : What may these carvings be said to resemble most ? but : What is the significance of such similarities as these ?

This is the original question at issue, and both sides ask us to interpret the evidence in accordance with the views held by them in respect of the problem that it is sought to settle by means of this evidence. One side says that similarity implies common origin : the other says it does not, or, alternatively, that a similarity cannot exist, when to admit it would prove common origin ! May not the truth lie between the two ? A cloud may be very like a whale, or a camel, yet there may have been no purposeful intention to bring about a resemblance. It is quite possible that the resemblances noted by Elliot Smith on Stela B came about almost accidentally under the sculptor's tool. For the outline of an elephant's head and trunk does closely resemble that of the head of a macaw, a toucan, a vulture, or a tapir. All these creatures must have been familiar to a Central American sculptor in pre-Columbian days. And, if the walrus at the Zoo is very like a cavalry major in retirement, or the elephant may be said (*a posteriori,* of course) to resemble a Labour Lord Chancellor, are we to postulate lines of common descent for each of such remarkable couples ? So, the great question : What is the significance of similarities ? remains unanswered, even though, as we must, we agree with Elliot Smith that the trans-oceanic diffusion of early culture has been regrettably belittled by those who have a psychological " urge " in favour of such belittlement.

The whole book is, however, full of interest, of learning, and of import. The woodcuts have been beautifully executed, and Prof. Elliot Smith's prime hypothesis has a higher fate reserved for it than that of mere acceptance. Impartial discussion cannot fail to accentuate the part it must play in opening up new pathways and affording us glimpses of new horizons.

The Nature of Intelligence. By PROFESSOR L. L. THURSTONE. (Kegan Paul, 10/6.)

Professor Thurstone's study of mental processes forms the twentieth volume in the "International Library of Psychology" which has been so successfully launched during the past two years, and it fully comes up to the high standard which the library has set itself. In particular it supplements the realistic account of Reasoning offered by Rignano, while from another point of view it developes the biological treatment of thought set forth in *The Meaning of Meaning*. "My main idea," writes the author (p. 51), "is that mental life can be thought of as action in the process of being formulated"; and in elaborating this idea he both sweeps away a vast amount of confusing jargon with which misguided logicians have littered up what is essentially a biological problem, and achieves a synthesis of current doctrines which at present appear to be irreconcilable.

As the remarkable debate between Professor McDougall and Dr. J. B. Watson, which is printed elsewhere in this issue, should convince Behaviourists, Dr. Thurstone has hit upon the only profitable way in which the new psychology can continue to advance when it comes to consider the higher forms of mental behaviour. And it is his treatment of such themes as conceptual trial and error that merits the particular attention of philosophers. He is not content to leave the "concept" to the metaphysician in any form. He will not even allow it to remain as an entity such as has given rise to conceptualism, whether scholastic or modern. All mental states are for him unfinished acts. The higher thought processes are all impulses towards action that are as yet only loosely defined. Higher and abstract mental life is loosely organised and anticipates a *type* of conduct rather than the specific act. The definition attained by an impulse or motive before it becomes conscious constitutes the subconscious or preconscious. Mental life would thus be interpreted in the light of the action in which it completes itself. It would be action in unfinished form; and a concept (p. 63) becomes an act "so skeletal that our own bodily location still remains to be chosen." The term "idea" is restricted in this analysis to representation which contain enough attributes to define one's bodily relation in the imaginally expected experience, whereas the concept is "caught and rendered focal" earlier.

Whether Professor Thurstone's insistence on the organism as a hunter after stimuli, as opposed to the orthodox stimulus-response descriptions, is justified must be left to the biologists to determine, but there are certainly those who will regret that he has not been equally radical with regard to some of the more traditional assumptions which he has seen fit to leave undisturbed. Thus on p. 127 we are told that "psychology is concerned with mental life, and it is only incidentally curious about its neurological equivalents," which implies an acceptance of psycho-physical parallelism in no way necessitated by his analysis. It is to be hoped that he will in due course give the same attention to the part played by language in the formation of psychologies that he has here given to the part played by conduct in the formation of intelligence.

Essays in Applied Psycho-analysis. By ERNEST JONES, M.D. (Allen & Unwin, 18/-.)

Though perhaps not so important as the author's earlier volume of papers on Psycho-analysis, the present collection of Dr. Ernest Jones' essays is by no means inferior in interest to its predecessor. The range of subjects covered is no less wide—Hamlet, Salt, God, War, Louis Bonaparte, and so forth, jumbled together in happy confusion—and doubtless the idea is to demonstrate the diversity of the psycho-analysts' interests and powers of application. It is unfortunate that more orthodox forms of psychology are not in a position on the ground of achievement to throw more effective stones. The chinks in Dr. Jones' panoply would appear to be many, but where there is so much darkness any light that he can cast may be welcomed. Such a healthy disregard of convention, and especially of religious convention, has been evinced by few modern writers of repute, and plain speaking is more than usually rare in medical men ; indeed, it is significant that one of the most hopeful themes in the volume is that which is concerned (Chapter XI) with the Linguistic factor in English Characterology. Whether the particular features to which Dr. Jones refers results " from the success of a Norman adventurer some thousand years ago " is less certain than their evil influence on the nation at the present time.

Evolution at the Crossways. By H. REINHEIMER. Pp. 191. (The C. W. Daniel Company, 6/-).

This is in some respects a curious book. It is written in a style that is diffuse, and the method of exposition adopted is one that at times almost degenerates into rambling. Without doubt, however, Mr. Reinheimer is right in underlining the utter inadequacy of the picture of the world as it now is, as one brought about by mere Struggle for Existence. Mr. Reinheimer finds, in Symbiosis, a principle to whose operation must be ascribed " more than anything else " the course that evolution has taken. In his own words, in place of Darwin's competitive theory of evolution an opposite, or co-operative theory has been framed. We are given a new kind of teleology. " The biologically good, being in accordance with plan, survives, while the biologically bad is destined to degeneration and ultimate extinction." The old picture of the world as a struggle between the Good and the Evil principles is re-made for us : but, instead of the Evil, we are to think of the Struggle for Existence, and, instead of the Good, of " bio-moral " Symbiosis. There are then two distinct and opposite pathways of life. The one which pays best, and which conduces to progressive integration is, we are told, that of Symbiosis. The other, which leads to losses and to disintegration, is that of predacity. The principle is to be adapted—or adopted—in respect of the conduct of our own lives, and will lead to physical and to moral health. It may, so the author hopes, lead to a " religion of evolution." The true importance of the book lies in its insistence on the immanence, in the world of science, of that problem which, in the world of politics, is represented by the present choice between International Warfare and the League of Nations. But this is the Eternal Riddle. It has been stated by

Philosophy, by Theology, by Sociology, by Ethics, and by Economics—each using a special language. Science, during the latter part of last century, thought to evade the crux, by denying it. And, even if Mr. Reinheimer has not given us the solution, he does well in making its continued evasion impossible for all save those who take refuge in the scientific dogmatism that to-day occupies the place in the world of thought that religious dogmatism did during the Middle Ages. An application of his views to the problem of Malignancy will be found elsewhere in this issue.

Constructive Conscious Control of the Individual. By F. MATHIAS ALEXANDER. With Introduction by PROFESSOR JOHN DEWEY. Pp. 317. (Methuen and Co., 10/6).

Mr. Alexander appears to be one more of the many sincere and earnest thinkers who have devised, not only a system of personal hygiene that is of real value, but a system of thought or belief that is at any rate a solace to the disturbed and distraught. Like so many of these—whether Buddhists, Confucians or Christian mystics—Mr. Alexander is of opinion that the success attending the physical method advocated proves the validity of the explanatory formula at the same time that the truth of the views inculcated determines the rightness of the physical method. The practical remedy offered by Mr. Alexander is summarized in a phrase—the resumption of the conscious control of our whole activities. Many workers from the psychological standpoint do, in fact, recognise that physical well-being is hardly attained unless, as they say, the conscious and the unconscious are " reconciled." Others, working from the physiologist's point of view, will declare that neuroses and psychoses depend upon conflict between the cerebro-spinal and the sympathetic nervous systems or activities. But, when it is claimed that we should resume conscious control of our whole activities, a debateable proposition is offered us. The physician is inclined to say that it is precisely the rise into consciousness of the nervous processes attending some of our activities that constitutes states of neurosis. Just in the same way, it is when the control of a business undertaking, in all its activities, is too consciously exhibited by the chief, that fussiness, interference, confusion, and disorder are introduced. There is no doubt that much in Mr. Alexander's writings is valuable and stimulating, but one kind of expression that may make the judicious grieve may be pointed out. On page 200, Mr. Alexander says that, when we wish, as we say, to take a breath, all we have to do is to reduce the pressure exerted upon the lungs by the chest walls, and to employ those muscular co-ordinations which increase the intra-thoracic capacity of the lungs, thereby causing a partial vacuum in the lung cells of which atmospheric pressure takes advantage, by increasing the size of the cells, and thus the amount of air in the lungs. In Cruikshank's celebrated drawing, the little boy who is teaching his grandmother to suck eggs says the right thing to do is to make an aperture at one pole and a corresponding aperture at the other, and then, applying the mouth, to extract the contents by suction. The grandmother replies that this is very clever: in her time one only made a hole at each end and then sucked.